Vol. XV. Dec. 15, 1887. No. 24.

TERMS: $1.00 PER ANNUM, IN ADVANCE; 2 Copies for $1.90; 3 for $2.75; 5 for $4.00; 10 or more, 75 cts. each. Single number, 5 cts. Additions to clubs may be made at club rates. Above are all to be sent to ONE POSTOFFICE.

Established in 1873.
PUBLISHED SEMI-MONTHLY BY
A. I. ROOT, MEDINA, OHIO.

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SEPARATORS—WOOD OR TIN?

DR. MILLER CONSIDERS THE RELATIVE MERITS OF EACH.

IF late I have seen no discussion as to the relative merits of wood and tin for separators. I think it is pretty well agreed, that each one is best in its own place—wood for a loose separator, and tin for nailing. I have given both a pretty full trial. A wood separator nailed on a wide frame, although the grain allows it to make no sudden bend in the direction of its length, will make various curves in the direction of its width, making it difficult if not impossible to keep the wide frames as close together with wood as with tin.

Whether loose or nailed, tin has the advantage of taking up less room than wood; but the difference is not so great with separators 26 to the inch in thickness instead of 16 or 17, as I have heretofore used them. On the other hand, wood is warmer than tin, and this may make quite a difference in cool nights.

Where loose separators are used, as in T supers, great exactness of length is required, for the length can not, of course, be greater than the inside length of the super; and if it be an eighth of an inch less, the wall of the section being only an eighth of an inch thick, the separator may fall at one end to hold its place between the sections. Now, suppose there is a variation of $\frac{1}{16}$ of an inch in the length of the supers (and it will be pretty exact work if there isn't), it will readily be seen that a separator $\frac{1}{16}$ too short may spoil matters. Separators, whether of wood or tin, may be cut very exact in length, but the tin may very easily assume something of the serpentine or wavy form in the direction of its length. From this, two evils result. First, the waving form lessens the length of the separator, so that it may become entirely too short. Second, wherever a wave occurs in the tin, the comb in the sections is built to correspond, making the sections untrue, one bulged, the other hollow. I have seen tin separators in a T super so shortened as to be $\frac{1}{4}$ to $\frac{1}{2}$ an inch out of place at one end. The stiffness prevents any thing of this kind in wood.

Tin is easier cleaned than wood, and at present prices I don't know that it pays to clean wood. Indeed, I think I shall hereafter use nothing but new wood separators, and, after using once, throw them away. It costs only one cent or less for each super (aside from freight), and with new separators it is so easy to put the sections in the super, and then they are kept so clean and nice that I think I can make more by using new than to clean up the old ones.

SECTIONS BUILT TO ONE SIDE.

Complaint has been made of sections so built as to be one-sided, and often attached to the separator. I think the sections will not be found attached to the separator unless foundation-starters of large size are used. The remedy is not easily found; but if I say what I think is the cause, it may help some one to suggest a remedy, for the difficulty is quite a serious one, occurring equally in wide frames or other supers. If bees have only a little honey to store, they are prone to continue storing in combs, or, indeed, in cells already started. Give, to a strong colony which is storing rapidly, starters of foundation two inches or more apart, with no separators, and full surface for attaching comb midway be-

tween the starters, and such comb is often started; but a colony storing slowly prefers to lengthen out the cells already started; whether on account of economy of wax or other reason, I can not say. So if they are working in the center sections of a super, when these are filled, or whenever they need more room, instead of commencing vigorously on both sides of the next starter, as would a strong colony storing rapidly, they commence on the side of the starter next to the cluster, or, at least, work most rapidly on that side. Now, the weight of the filled and constantly lengthening cells on the one side throws the soft, yielding foundation to the other side, giving room to lengthen the cells still more, and still more push the foundation to one side till the bees attach it to the separator. The only remedy I see is to reverse the position of the sections after well started; but this is too much trouble, leaving us at the mercy of the bees, unless we keep all colonies strong. C. C. MILLER.

Marengo, Ill.

You are probably correct as to what you say regarding the merits of the wood and tin separators. A few years ago we made and sold wood separators, but at that time there was not very much of a call for them. Since the T super has obtained so much favor, wooden separators will evidently come into more general demand. In anticipation of this we have set up our machine for shaving them out. We first made them as thin as 34 to the inch; but upon the advice of friend Miller and one of our local bee-keepers, we made them a little thicker, 26 to the inch. Now, it may be possible that we have them too thin yet; but if we cut them thicker we find it breaks the grain of the separator; aside from this, we believe there are some advantages in the use of thinner ones which will offset some of the advantages of the thicker ones. We have put the price at $2.00 per 1000, $1.25 for 500, 30 cents per 100—low enough so we think the bee-keeper can afford to throw them away and purchase new ones, as suggested by friend Miller.

SELLING EXTRACTED HONEY.

HOW DOOLITTLE DOES IT.

I AM asked by a subscriber of GLEANINGS to give my plans for selling extracted honey. First, we have our home trade, which is of a twofold nature—that which comes to the door, bringing pails, etc., and taking away the number of pounds called for. If this were only large enough to take all that could be raised, the bee-keeper might be perfectly happy when thinking along the line of disposing of his product; but as this is not often the case, we next take a sample and go around among our neighbors, leaving a sauce-dish full at every house, and informing them that we shall be around in a couple of days with the same honey for sale, giving the price that will be then asked for it. Where the crop is not large, the whole can be disposed of in these two ways, especially if we feel disposed to trade our honey for butter, eggs, meat, wheat, oats, corn, etc., which can be used in our families, or readily converted into cash. I find people much more ready to exchange their products for honey than they are to pay cash for it. Even the man who works for me is much more ready to exchange his day's work for honey than he is to pay me the price of a day's work in money for my honey. There seems to be a certain desire to keep money after it is once obtained, with most people, which is so strong that they will often go without that which costs money, while an exchange can be readily accomplished with no money in view.

Second, we have our store trade, by which I mean the leaving of honey in glass fruit-cans, honey-tumblers, and the different pails suitable for retail purposes, at the stores in our vicinity, to be sold on commission, or to pay for the goods we purchase. Here we find the exchange mania coming in again; for a store-keeper will often give a good bargain by way of trading something we want, for our honey, while we could get him to take but very little, if any, if we demanded cash for it. I can not see the least impropriety in trading honey for boots, shoes, calico, hats, caps, or any thing we must buy; for in this way we find an outlet for our product, and purchase what we must have. By carefully looking after this store trade, and being affable and pleasant, much honey can be disposed of.

Third, we have the shipping of honey to distant points, to be sold on commission or for cash. As nearly all are familiar with the way this is usually done, I shall not dwell on these old plans, but proceed to tell you of one studied out by myself, which may be new to most of the readers of GLEANINGS, and which has worked well so far as I have tried it. Not producing much extracted honey of late, of course I have not tested it as thoroughly as I might have done; but, as I said before, it has been a success so far as I have used it. During my leisure days in winter I get out boxes of white basswood, poplar, or whitewood (tulip) lumber, to hold a given number of pounds, the sizes usually being 5, 10, 25, and 50 pounds, basing the size of the box on the fact that 20 cubic inches will hold one pound of honey, and give a little margin to spare, so that a box containing 200 cubic inches will hold 10 lbs. of well-ripened honey, and leave about ¼ inch at the top unfilled. The material for the boxes, after being gotten out, is piled up in the loft of the shop, and left till the next September before making up, when it is thoroughly kiln-dried through the excessive heat which pervades this place during the summer months. As soon as the honey begins to candy in the storage-cans, this lumber is gotten down, and the desired number of boxes made. When made, the inside of the joints is coated with paraffine or beeswax, and the desired number of pounds of the partially granulated honey run in. Over the top a sheet of manilla paper is now laid, and the cover laid on top of this, when the whole is set away till wanted for shipping. Along from November to February, according to prices and my wants, I take a block of wood of suitable size and bore a hole in it, into which I put a chunk of about two ounces of this now solid honey, and a slip of paper containing printed directions how to liquefy the honey, when a little piece of section is nailed over the open end. The block of honey is nicely wrapped up, and a tag tied on. I now take down my gazetteer, which gives the population of every town and city in the U. S., and pick out the place or places where I think such honey as I have will sell the best, according to population, location, and manufacturing interests,

when I mail the postmaster of the place selected one of the little blocks, and write to him, sending terms, etc., asking him to interest himself in the matter by showing this sample to those he thinks would wish honey, as they come after their mail, giving him a certain commission on whatever he can sell. As orders come in, take the boxes of honey, and after inspecting to see that all is right, drop on top of the honey the slip, telling how to liquefy it, etc.; then put on the manilla paper as before, and nail on the cover, trimming off the paper left outside, with a sharp knife. This paper is put in to make this upper joint dust and dirt tight. All that is necessary to be done now is to direct and ship. Without going into further details, I think all can understand that here is a plan that is not only cheap as to package, mode of working, etc., but brings our product to the consumer with as little middlemen agency as possible, when a market away from home has to be sought. G. M. DOOLITTLE.

Borodino, N. Y., Dec. 3, 1887.

Friend D., your plan has many excellent features to commend it. The principal difficulty, however, is with the wooden package. Prof. Cook mentioned it at Chicago, and the matter was discussed somewhat. Friend Heddon said he had tried the wooden packages; and while they did very well for handling honey around home, he did not believe they would ever take the place of the square tin cans which we show in our price list. He said he had been annoyed by having the boxes broken, and by leakage. As these packages are, however, cheaper than any thing else we can get up, we should like to have more reports from them. I was somewhat surprised to see how a rising vote threw out wooden kegs for shipping honey. Almost every one present had had some bad experience with them. The greater majority by far were in favor of tin cans securely boxed.

VARIOUS MATTERS.

IMPORTANT FACTS FROM FRIEND HYDE.

I SEE by GLEANINGS that there is a short crop of honey in all parts of the country, and do we know why it is so? I know that, in some parts, it is too dry, and in others too wet; but here when white clover was in bloom we had what I throught as good weather for honey as any I ever saw; in fact, June and July were just such months as I should have ordered if I ruled the atmosphere.

There was clover in abundance; and after clover, sumac; but still there was not much honey—only about enough to keep brood-rearing going or until goldenrod came, which gave almost enough for winter. Some colonies got sufficient from this source, as there was no honey in the hive before this came. So now I shall have a good opportunity to test goldenrod for wintering. This honey has the same peculiar odor as you describe the aster as having, on page 829.

Two years ago some of my neighbors claimed to get a large flow of honey from wild cherry, and that year we had a host of cherries, so this year I expected my bees to work on them; for, as expected, they were full of blossoms; but, on the contrary, there were but few bees to be seen on the trees; likewise the cherries dropped before they ripened. There was no honey from buckwheat, and buckwheat yielded poorly. I sowed some the 25th of July, that would have yielded well if it had not been for frost, and the bees were busy for a good while upon it. This was European silverhull. Isn't it queer that we have it dry here while you have it wet, and vice versa, when the distance between us is so slight?

SUGGESTIONS ON SMOKERS.

I use a grate like the one in the bottom of the Bingham smoker, on top of the fuel, to keep the fire in, should the cone-top drop off. I also use one in the Clark to keep the sparks from coming out. I find, also, that the top of the Bingham will not heat so badly with this in.

THE BUTTER-DISH FEEDERS.

I want to suggest a few thoughts about feeders. Why not invert a large butter-dish over a smaller one, after you have placed it on the frames over the bees, first making an opening in the bottom of the larger one sufficient to pour feed through, and to see how full you are getting it? Then you can cover the opening with enamel cloth, and pack all around it with chaff to keep the feed warm.

I want to suggest another idea to N. L. Gerrish or C. C. Miller, in regard to filling empty combs with syrup. Instead of using the machinery that friend Miller describes on page 850, I take an empty comb (those that are in wired L. frames are the best to handle) and immerse it with the flat side up, into a wash-boiler half full of syrup, or more, pushing the comb down with one hand until the syrup flows over it, and then pass the other hand back and forth over the comb, lightly touching it. This will suck the air out of the cells, causing the syrup to take its place, until the whole side is filled or rubbed in; then reverse, and fill the other side in the same way. After they are filled, place them in a comb-bucket, to drain off. You might, before you set them aside to drip, wipe off with your fingers some of the surplus. After you have a sufficient number, take them to the hive, and the bees will repack them. You want your syrup about blood warm, and thick. I make mine like friend Heddon, using 3 lbs. of water with 10 lbs. of sugar, adding one level teaspoonful of tartaric acid when boiling. I know, friend Root, that you object to using any acid; but have you known of any harm that has resulted from it? If not, why not use it, as it will keep syrup from sugaring again? When I don't use it I find the sugar all crusted on to the combs after filling the combs in this way.

CLEANING OUT THE SECTIONS.

Friend Hilton, on page 851, says that he has no trouble about getting bees to clean out the sections and carry the honey below. I have tried the same way as he describes, without good success.

J. L. HYDE.

Pomfret Landing, Conn., Nov. 15, 1887.

Thanks, friend H., for the information you give us. I am inclined to think the goldenrod gave the peculiar odor you allude to.—Your remark in regard to the butter-dish feeder is good; but I don't quite see how the bees are going to get at the feed, on the supposition that the larger butter-dish fits closely over and around the edges of the butter-dish below. As a general rule, however, the butter-dishes are warped a little. In this event we have ample

room for the bees to go to and from their feed. Except as a winter feeder, we hardly see the need of the extra butter-dish. Even in quite cold and frosty weather in March, we find that the bees will readily pass up and take the feed, when they would not touch the syrup in a tin receptacle. So far as I know, your plan for filling a comb by rubbing your hand over the foundation is new and practical.

TWO VALUABLE FACTS.

ARE ENRAGED BEES LIABLE TO ATTACK BLACK OBJECTS?

THE above is the heading of an article in GLEANINGS, Oct. 15, page 785. You think the material has more to do with it than color. Several years ago I transferred my bees from deep frames to the Langstroth, or Simplicity frames; and by so much shaking of the bees they became enraged. There was a hen and chickens in a coop, close to the apiary; part of the young chickens were white, and part were black. They were attacked by the bees. I lifted the coop off from them, and the black chicks were completely covered with bees. You could not see them. They were balled, just like a balled queen, and the white chickens were not touched. I poured water on them, and got them away from the bees, but I don't recollect whether they lived or died. Was there more wool on the blacks? I think it was the color of the wool.

WILL CHICKENS EAT WORKER-BEES?

This is doubted by some, and I think it is very seldom that chickens eat bees; but sometimes they do. I once caught a hen catching worker-bees at the entrance of the hive, as they came in loaded. She would snatch the bee and jerk back, but took them about half as fast as she would have picked up corn. It was on Sunday, and I was eating my dinner when I saw her at her feast. I jumped up from the table and killed her, cut her crop open, and counted 53 bees in it. I don't know which commenced first. I think I was half done. I then went to work, I think the next day, and fenced them out; but since then I have let them run in again. Keep me a place in Blasted Hopes. I am coming. R. ROBINSON.

Laclede, Fayette Co., Ill., Nov. 1, 1887.

Friend R., you give us a very valuable fact. In the case of chickens, if the bees attacked the black ones, and did not the white ones, they certainly have the power of distinguishing one from the other by color. And this would settle another point—that bees know colors. Before deciding, however, that there could have been no mistake in the matter, we should be glad to hear if anybody else has had the same experience.—I have never seen chickens eat worker-bees; but I have been assured they sometimes do, and on such good authority that I have been satisfied of the fact. We allow chickens to run about among the beehives as they choose, and I often see them snap up moth worms that have been carried out by the bees. If I should see any thing, however, that looks suspicious, as the case you have mentioned, I think I should adopt about as prompt measures as you did. I presume it is only occasionally that a chicken happens to learn that heavily laden bees are good.

SUCCESSFUL CELLAR WINTERING.

HOW ONE OF THE FRIENDS ACCOMPLISHES IT WITHOUT SUB-EARTH VENTILATORS OR ARTIFICIAL HEAT.

I HAVE just read Dr. Miller's article, on page 812, with much interest. As I have been wintering bees in cellars for about 28 years, I will give my views as to what I think on this important matter. I have not, in all my experiments, found any place so good to winter bees in as a good cellar. I desire a very dry one. Our cellar is under our house, or, rather, the main parts, which are each 16 x 24 ft., in the form of an L. There is no partition through it. There are four windows, through which fresh air is admitted. In one part of the cellar we keep our bees. As we use it, the vegetables are in the cooler part and the bees in the warmer part, or under the base-burner. We can winter, in the room stated, from 50 to 125 colonies. We have an old carpet hung up between the bees and cooler part of the cellar. We never resort to artificial heat. The temperature is well under control, and in the bee-part it can be kept at from 50 to 60° if desired, in our coldest winters. It is usually kept at 45 to 50°, as we prefer that temperature. Last winter there was not a variation of over 4° from Nov. 18 to Apr. 10—the time the bees were in the cellar. The depth of my cellar is 7 ft., of which 1½ ft. is above ground. The wall is 18 inches thick from the bottom up, to within 3 ft. of the top. The upper 3-ft. wall is 15 inches thick, leaving room for studding and lathing, which is plastered with two coats of mortar. This gives two walls and a hollow air-space, where most exposed to the cold. As it is plastered up tight to the floor above, it is about mouse-proof, which is good in that respect. The floor is cemented so that bees and litter can be easily taken up when desired. This, also, makes a drier air, as is well known. The window-frames are supplied with screen-frames, which sit in near the window-sash, and are packed full with chaff, through which we admit pure air and exclude light. The windows are left open or ajar, in the bee-apartment all winter, excepting during very severe spells of cold, and then only for a short time. Variation in temperature in such a cellar is very slight, even if we have a week or two of thawing weather. In fact, our bees are as quiet in April as during the winter. When desired, the carpet can be swung to one side a little, and cooler air admitted gradually from the other apartment. One thing is evident: Where a change of temperature is desired, that change should not be abrupt, but very gradual. We have never found an exception to this.

We do not wish our bees to breed to any great extent while in the cellar. Very little brood is found when removed from the cellar in April. The entrances to the hives are left open full width, and are ¼ x 15 inches. The space between the bottom-bar and bottom-board is half an inch, summer and winter. I have never had combs built where this space was one inch, as you speak of having also tried.

I have not lost a colony in cellar wintering in the last six years. I wintered from 50 to 125; average about 90 colonies. F. A. SNELL.

Milledgeville, Ill., Nov. 22, 1887.

REPORT FROM TENNESSEE.

NOT VERY ENCOURAGING.

MY report is not very encouraging, but here are the facts. I wintered on summer stands with no packing, and without loss, beginning in the spring with 20 colonies in fair average condition. They started well, but received a severe check when in the midst of peach-bloom. All our fruit was cut short by frost. For some unknown reason, poplar (tulip) was also almost a total failure. I took only 29 gallons of honey, mostly from sourwood and cotton, but might have got five or six more in October from aster had not absence from home prevented. The aster was later than usual, on account of drought in August and September, but it came out rich in October. I had but three natural swarms, and put two of them in one hive. I sold one colony and made two full colonies by consolidation of nuclei. I made all ready for winter Dec. 1st, and have 22 colonies, all rich in aster honey. We have had some cold weather but nothing near zero. For two weeks bees have been out more or less almost every day. So far as I know, my report is about the average for this county. One of my neighbors has done better, several not so well.

Lincoln, Tenn., Dec. 6, 1887. DAVID STRANG.

DANGEROUS STINGS.

APIS MELLIFICA IN A CASE OF SEVERE STINGING.

AFTER reading Dr. Porter's article on bee-sting poison as a remedial agent, I thought I would tell you what I know about it. My baby, 19 months old, got to a stand of bees lately, during my absence, and was very nearly stung to death. The first thing we did was to bathe him in strong soda-water; and after that we gave him cream-tartar water; and when the doctor came, the first thing he gave was apis mellifica, and put him in a hot soda bath. The bee-stings affected his stomach and bowels the same as if he had taken some deadly poison internally. The doctor said it acted like so much arsenic, and that apis mellifica was the remedy to give, and it proved to be so; for the little sufferer soon showed signs of improvement. But, the strangest part of it all, the places stung swelled but very little, and that not until the next morning. He had over two hundred stings on the head, face, and hands; and after reading how painful it is to be stung in the gristle of the ear or nose, I know his suffering was terrible, for the blood ran off the ears when the stings were removed, and one bee had to be picked out of his ear with a pin. You may ask why I gave cream of tartar. Well, I don't know whether it is good for bee-stings or not; but I gave it to my brother a few years ago when he had been stung so badly, while trying to transfer a stand of bees, that he had a hard chill, and there were hives all over his body as large as my hand. I gave him about a tablespoonful of cream of tartar, and a strong solution of cream of tartar to bathe in, and then sent for the doctor. He was much better by the time the doctor came, and he said I had done as much as he could do, and did not give him any thing else. By evening (he was stung about noon) he was able to be up, but said he felt as if he had been sick a week. Now, I think every one who has bees ought to keep a vial of apis mellifica on hand, with directions to give in the case of severe stinging. MRS. E. C. HARPER.

Iantha, Mo., Nov. 28, 1887.

My friend, I presume I should have done just about as you did, in case of such severe stinging; but I think we should keep in mind, after all, that such reports do not give any positive proof that any of the remedies you mention did any good at all. From what experience I have had with cases of severe stinging, I should expect the baby to recover just about as you describe, without any medicine or treatment whatever, except removing the stings as speedily as possible.

WINTER LOSSES.

COLONIES DESERTING, AND BEES DYING FROM POISON.

LAST winter was a hard one on bees about here. One man, who wintered in the cellar, and has not lost any to amount to any thing for several years, and boasted that he would not lose any last winter, lost two-thirds of what he had. I lost 28 out of 80; 14 out of the 28 deserted in one afternoon. There were two more that deserted, but I got them to stay in their hives after putting them back two or three times.

The 52 that were left I increased to 72, and got enough honey to pay expenses; but I am not discouraged, as I got twice as much honey last year as I expected, and did not lose any thing this. This is better than a good many have done.

If I had followed the advice of some of the leading bee-keepers I should have lost 13 more swarms than I did. They advised that beginners should not handle their bees until the last of April. I commenced working mine the fore part of March, and found one that would not have lasted much longer, and I brought it through all right. About the middle of April, 12 colonies had lost their queens by deserting and otherwise, but I kept at work at them, so that, when clover came, they were all right.

What was the cause of so many colonies deserting in one day? Was it the bright warm weather, after the cold snap we had the first of the week?

PLANTS THAT ARE POISONOUS TO THE BEES.

What is there about sweet alyssum that will kill bees? We had a little patch in a flower-bed, and some days it would have a very strong and sickish smell; and the bees would buzz around it lively for a while, getting pollen, which was very sweet, when all at once they would drop down as though they were stupefied, and in a minute or two they seemed to be in great agony, and then die. Other days they would work on it all day, and it did not affect them. The days that it killed them, the pollen was a greenish yellow; and when it did not, it was a bright orange. P. H. FELLOWS.

Brodhead, Wis., Dec. 3, 1887.

Friend F., there are blossoms besides the sweet alyssum which at times seem to have the same effect on the bees. It has been observed and mentioned, even with so common a plant as sweet clover.

BEE-KEEPING AND FARMING.

MY REPORT, ETC.

I WENT into winter quarters with 144 colonies. I lost about 10 through the winter and spring. The spring was so unfavorable, the bees, instead of building up, ran down from the first of March till about the 18th of August. They did not gather honey enough in that time to make them quiet to manipulate.

I fed my home apiary, of about 100 colonies, 3 bbls. of honey-dew. This I fed outside the apiary, through the months of July and August. The first of August they were starving; that is, the weaker colonies. I then fed them 200 lbs. of sugar, made into syrup, and poured it into empty combs and set it in the hives.

About the 18th of August there was a little honey-dew, enough to start them to rearing brood: perhaps they gathered 5 or 6 lbs. per colony. About the 25th of August, Spanish needle began to bloom; but it continued so very dry that there was but little hope of weak colonies gathering sufficient stores for winter. I then commenced doubling up, or doubling down, to 95 colonies. Many of them by this time had lived out their threescore and ten. I fixed them up the best I could, and ceased making any effort for comb honey, inasmuch as I had more combs than I could take care of. The moth destroyed about 200 combs. I had to take care of my combs 11 months before I could save them on hives. My crop foots up to 1000 lbs. of honey and 30 lbs. of beeswax.

ITALIANS VERSUS BLACKS.

I had 20 colonies of Italians in one apiary, that were not fed any. I lost one colony and got 435 lbs. of honey from them, leaving 8 well-filled frames below for winter stores. I had 15 colonies of black bees in another apiary, and 6 colonies of Italians. About August 25th, when the honey-flow came, if I may call it a flow, there were only 4 of the 15 alive, and 5 of the 6 Italians alive. I got surplus enough from the Italians to winter the blacks; but I found one more black colony in preparing them for winter, about "petered out," which will leave 3 of the 15 alive.

Bee-men have lost from one-fourth to one-third of their bees, and they are not quite so well supplied for winter as usual either, while those that don't care for their bees have lost at least a half, and those that are alive now may not have sufficient stores to winter only the strongest colonies. Feeding bees for winter is not practiced here much. If bees don't gather enough to winter on, all they have to do is to step down and out.

FARMING VERSUS BEE-KEEPING.

Inasmuch as I had nothing to do to my bees but to feed them occasionally, and count the dead at night, I turned my attention to farming. I sowed 6 acres of oats and obtained about 225 bushels. I had 22 acres of meadow, which yielded about 7 tons of hay—and weeds. I gave one-half for getting it put up. I planted 15 acres of corn, which yielded about 1½ gallons per acre. I cut up the fodder, bound it in bundles, and after it settled it looked as if there were about 200 bushels of fodder. From the middle of June to this date there has been, as nearly as I could come at it by keeping a jar on a bee-hive, 3½ inches of rain. From the middle of July to the middle of August the temperature ranged from 104 to 115, and the country was literally plastered with chinch-bugs. Below I append my tabulated report:

1000 lbs. of honey at 10 cts. per lb	$100 00	
30 lbs. of beeswax at 23 cts. per lb	6 90	
	106 90	
INCIDENTAL EXPENSES.		
90 gallons of honey-dew at 45 cts. per gallon	40 50	
200 lbs. of sugar at 5½ cts. per lb	11 00	
Other material	90	
	52 40	
		54 50
FARM STATEMENT.		
6 acres of oats, 225 bush. at 22 cts. per bush	$49 50	
15 acres of corn, 3 bush. at 40 cts. per bushel	1 20	
22 acres of meadow, one-half, 3½ tons	21 00	
4 acres of apple-orchard, ¾ bush	50	
9 bush. of potatoes at digging time	5 40	
52 bush. of wheat at 65 cts. per bushel	34 12	
11 bush. buckwheat at 60 cts	6 60	
	118 32	
EXPENSES.		
Cutting oats, planter, and seed	$ 5 00	
Wheat thrashing	1 60	
Feed for two horses, corn, 50 bush	16 00	
Say one ton of hay	10 00	
	32 65	
		85 67

I spent about 20 days with the bees. There were between 75 and 100 days spent on the farm.

LaClede, Ill., Nov. 8, 1887. R. ROBINSON.

BEE ENTOMOLOGY,

Or Enemies of Bees Among the Insect Tribe.

MYRIAPOD—THOUSAND-LEGGED WORM.

MR. JOHN H. RUPERT, Woodcock, Pa., sends me a species of iulus, one of our common myriapods—the so-called "thousand-legged worms"—and a large female blister-beetle, *Meloe Angusticollis*. He wishes me to name them in GLEANINGS. The first—*iulus*—is one of the vegetable-feeding myriapods. The common name—thousand-legged worm—shows the tendency of our people to exaggerate. These insects are cylindrical, with from fifty to sixty segments, or joints; each ring, or joint, has four legs, or two pairs of legs, so *hundred*-legged worms would be a correct name. Some claim that these eat the potatoes, and so cause scab. They are often called "wire-worms." This term applies more correctly to the grubs of our elater, or spring beetles. These myriapods are perfectly harmless, and may be handled with no danger, though the sensation of their many feet passing over one's hand is not altogether pleasing.

The large beetle is illustrated in my bee-book, and is the adult of the bee grubs, illustrated and commented on in GLEANINGS, p. 588. These are among the most interesting of our beetles. The vesicatory properties of the insects, and their strange and unique transmutations, make them most interesting subjects for study. A. J. COOK.

Agricultural College, Mich., Oct. 25, 1887.

But as the scientific name—myriapod—means *ten* thousand footed, friend Cook, how much more are common people inclined to exaggerate, after all, who call it only a thousand?

ESTABLISHING OUT-APIARIES.

DOES IT PAY? IF SO, HOW SHALL WE GO TO WORK?

THE following paper was to have been read at the convention recently held at Chicago; but through some delay it didn't reach there in time. Inasmuch as the subject of out-apiaries has been considered in our Question-Box department, we thought best to take the following from friend Jones's paper. He has had large experience in this line; and as he speaks from actual experience, the reader will find many valuable points in it:

This is the question that has been assigned me by your Secretary, and it is one which is receiving considerable attention just now, as many engaged in apiculture are increasing their colonies until they have, frequently, more than they can afford to keep in one apiary. Then the questions arise, What should they do? Should they sell them off or start "out apiaries"? There are some localities where 500 colonies might be kept with success, and there are others where 100 would overstock them. We consider from 100 to 200 colonies as many as is profitable to keep in the average apiary. In establishing out-apiaries, fifty colonies would make a start, but we would recommend a hundred, as no more trouble need be taken to manipulate them. These would contain 200 in the fall, which might be divided again; thus your apiaries, if you double your colonies, would double every year. But counting mishaps, sales, and losses, perhaps we might more reasonably expect to double our colonies every two years. This, of course, depends largely on the practice of the apiarist. One man is required at each out-apiary during the season, which in this country varies from four to five months. From our home apiary we located one about one and a half miles to the northwest, the next about four miles to the northeast, next seven miles to the northeast, then one five miles north, one six miles northwest, and one ten miles northwest, with sometimes smaller ones between. From personal experience we are satisfied that, in good localities, from two to three miles apart is far enough to have them. We have had as good results from the closest apiaries as from those furthest apart, and that, too, when there were over 200 colonies in each. If the locality were suitable, we should prefer to place them so we could visit all the apiaries by driving the shortest possible distance; that is, five or six apiaries might be placed round a central one, or in a way that you could drive or take them all in in one route. Ours, unfortunately, are not so placed, and it gives us five or ten miles of an extra drive to take them all in; but as the locations suited us better, we thought it would more than overbalance the extra cost of the journey to place them as we did. Each apiary should have a practical man or woman in charge. We have frequently had students look after them, but it pays much better to have assistants with at least one year's experience, as the foreman can not manage to go around to each apiary more than once a week, and sometimes scarcely that, especially if he has to give a day to each apiary, to instruct the one in charge. The assistant in charge has spare time enough on his hands to keep the yard in nice condition, besides preparing sections, putting them on, keeping the hives painted, and making new ones when required. We never expect him to do all the work during the honey-flow, but give him assistance in extracting. The more assistance that is required for this purpose, the better the apiary pays. When extracting we use little boys and girls for carrying the combs to and from the hives to the extractor. Two of them, a little larger and a little practiced, do the uncapping and extracting. We have also had boys from ten to twelve years old who could put the combs back into the hives very well after they had been extracted. This class of labor with us is very cheap, and there is generally plenty of it in the neighborhood of every apiary that can be got when required. The youngsters think it as good as a holiday to get an opportunity to work in the bee-yard. With a good practical foreman to visit the yards and see after them, as much can be realized from the out-apiaries as from the home ones. Very often they bring in better returns because they are selected on account of their fitness, while your home apiary may be tolerated only because of its being your "home," rather than the most favorable place for an apiary. Almost any number of apiaries may be managed in this way if the owner is thoroughly practical, and will devote his entire time to the business, or if a good reliable foreman and trusty students can be secured, or, better, those who have had, say, a year's experience. We are satisfied, that, after one has mastered the business, and understands it thoroughly, if his surroundings are suitable he is only fooling away his time with one apiary, as he can manage several without any more trouble than is required to manage one. He would require a suitable rig, so that in driving to each apiary he could take such supplies as he might require, and in returning could bring any honey that there might be on hand.

We have parties offering us the privilege of establishing apiaries on their premises, without any charge. One man, where we had an apiary for over ten years, sold his place and moved away. He has asked us to come and establish one on his new place, free of charge, knowing as he does the benefit that the clovers, fruit-trees, and vines receive from the fertilization of the flowers by the bees. The highest that we have ever paid is $25.00 a year for bee-houses or cellar to winter in. All the ground that is required is a quarter to half an acre to place the bees on. From $5.00 to $10.00 a year is the usual rent where a charge is made at all. Even though a person has a sale for all the extra colonies of bees he can spare, it will pay him to have at least one or two out-apiaries, because, if increase is the principal object, the sale of bees will doubly repay the interest on capital invested. Any honey that they may stow away, more than is required, can either be extracted, or the filled combs may be kept for future use, as it is desirable to have some such combs on hand to save feeding colonies that are run more exclusively for honey. We believe that all such apiaries should be managed for both honey and increase, unless the sale of bees is almost impossible at a very low figure, in which case increase is a thing not so much to be desired.

OUR BUSHEL BOXES FOR POTATOES.

SOME KIND WORDS IN REGARD TO THEM, FROM PROF. CHAMBERLAIN, OF THE IOWA AGRICULTURAL COLLEGE.

WE clip the following from the *Country Gentleman* of Nov. 10; and we hereby extend our thanks, not only to friend Chamberlain, but to the *Country Gentleman* as well, in giving so flattering a notice of our work:

I agree with C. E. Chapman, page 779, in discarding grain-sacks for handling potatoes, and wonder that Mr. W. F. Brown should recommend them after Mr. T. B. Terry's repeated mention and description of *bushel boxes* and their uses. The latter are better and more durable than crates; indeed, the very best things, it seems to me, that can be devised. I ordered 125 for the college this fall, and our foreman says they will pay their cost this year in the saving of labor in handling about ten acres of experimental potatoes, some ninety varieties. We ordered them of A. I. Root, Medina, O., the manufacturer of bee-supplies. They are of basswood (linden) lumber, half-inch or nine-sixteenths of an inch thick, bound with light galvanized hoop iron. They are sent in distant shipment by freight, "in knock down," boxed all ready to nail together, with nails, binding, and all, complete, and *exactly right*. The *top edge* of the *sides* of the boxes comes already bound with iron. The edge is grooved a little, and the binding is fitted on by machinery as neatly as a tailor would bind a coat-edge and press it. On arrival the boxes are nailed together and a band is nailed entirely around each end. A hand-hole is cut at the place of manufacture, by machinery, near the upper edge of each end of each box. The boxes are about 16 inches square, and are light, strong, durable, cheap, and most convenient. I do not give exact dimensions, because I am now away from home, and do not remember them, and because the boxes can be

ordered of Mr. Root, and shipped to any part of the United States "in knock down" by freight cheaper than they can be made in any locality, except by special machinery, and in quantity. My remembrance is, that they cost about twenty cents. Mr. Root, I presume, calls them "Terry's bushel boxes," not because Mr. Terry invented them, for I think he did not, but because by his writings he brought them into general notice and use; a real benefit to farmers. My impression is, that Mr. Terry suggested certain improvements in their construction. Both men have done a good thing, I think, in bringing them into more general use. They are the handiest things on the farm. With our low-platform "Michigan wagon," which I will some time describe, with its strong 7 by 16 platform, we can load 60 or even 100 bushels in a few moments after they are picked up over the field, and store them in the cellar or car without shoveling or any handling, except to empty the boxes.

I will add, that the bushel boxes, as used by friend Terry when I visited his place, were of very much heavier lumber, and made without the galvanized-iron binding which we have added to it. The first that I made were put into practical use out in the fields, picking up stones; and it occurred to me they would be very much more durable and more serviceable by this iron binding, and at the same time they could be made lighter, because thinner lumber would answer when bound with iron. I now remember that I spent quite a little thought and study on the matter, and concluded that an implement, to be used over and over again, as we used these boxes, needs to be made with a good deal of care and pains; and in view of this, friend Chamberlain's kind words were very acceptable when my eye ran on to them in looking over one of my agricultural papers—the *Country Gentleman*. A great part of my evenings are spent with these agricultural papers; and I have learned to feel toward them as if they were old and tried and much-esteemed personal friends.

FOUL BROOD AT THE HOME OF THE HONEY-BEES.

SUGGESTIONS FROM ONE OF OUR ENGLISH CORRESPONDENTS.

I DO not suppose I shall ever meet you; but nevertheless my thoughts are often with you in your good work; and you also have my sincere sympathy in your time of trial and fighting with the plague. Though until recently you had never even seen foul brood, you now appear to be having a hard time of it. Foul brood *is* very infectious, as I well know, but usually there is no reason why so many colonies should become diseased in any apiary when only two or three are foul in the first instance. Your own experience appears to denote that your bees have access to diseased hives in the possession of your neighbors, or have had the chance to get at honey containing germs of the disease, that you may have purchased; or else, what is still more probable, the reason that the complaint breaks out in so many different colonies is, that your operations in connection with the whole apiary are not conducted by a single operator who knows exactly what he is about, and the nature of the disease he has to contend with.

Had some *one* responsible apiarist, such as yourself, or Ernest, for instance, the entire control of *all* manipulations from the time of the first outbreak, I have no doubt that ere now that *caution*, so absolutely necessary to be practiced, would have become the watchword, and many already diseased stocks would never have become so. With several hands about, each carrying out some manipulation, it is utterly impossible to prevent the spread of the disease, unless the master-mind is ever present to see that every precaution is taken. Having foul brood in an apiary, every colony alike must be suspected until it is certain the pest is quite cleared away. Every time, whether opening a suspected, or what is thought to be a clean hive, the hands must be disinfected as well as the articles used, before another hive is touched. Thus only can one ever hope to eradicate the plague from his apiary, whether he adopt the phenol or starvation cure, or any other; once keep the disease from spreading to other hives, and a speedy cure is certain. Besides handling hives and frames indiscriminately, I have never known the disease to be spread, except by robbing, and this can be avoided by the careful apiarist.

Some twelve years ago, I completely cured my own apiary by the starvation plan, and never destroyed any bees, except the wretched remnant of a colony found to have been robbed in the first instance, and before I knew what I had got on hand. No colony renovated by starving, and then given clean hives, and made to build new combs, ever had the disease again, and so presently I had all clean stocks once more. Where one has a large apiary, and great risks at stake, this will ever be found the most satisfactory plan—melting down all combs, scalding and disinfecting the hives. The frames should be burned out of the way, as they are not worth cleaning. Single-walled hives are far more easily disinfected than those with double walls, and probably for this reason I shall never again use any but simple hives.

As a preventive, I would use Mr. Cheshire's remedy in food, given to every colony both spring and autumn; but as yet I prefer the total-renovation process as above, giving an immediate and certain cure, causing much less anxiety, and no further manipulations. The most economic plan must always be that which puts a job out of hand at once, as labor is no inconsiderable item where a large apiary has to be attended to. That phenol will cure, as well as act as a preventive, I am satisfied; but if I were troubled badly with foul brood again I should not feel justified in keeping it on hand *long enough* to cure by that means, leaving out of the question the many manipulations to be carried out meanwhile.

During my extensive experience with the disease twelve years since, as I have said, I not only did not destroy the bees when of any use, but I also saved the brood that would hatch. A certain colony (or colonies) had their queen removed; when the next lot, slightly diseased, was found, a new (starved) swarm was made with its queen, and given a fresh start, while the hive of brood, combs, and remaining bees, were placed with or above the queenless lot. As fast as the brood which would, had hatched out, the emptied combs were removed and destroyed; and so the process was continued until in the end only these "hospitals" remained to be starved out and their combs destroyed. In many cases the combs were cleared of every particle of diseased matter; and such was also the case where queens were removed from strong colonies,

taken in hand before the case had gone too far. Nevertheless, all such combs went into the wax-pot, and the refuse was carefully buried or burned afterward.

The lesson was such a good one, and the necessity of always adopting the greatest caution was so thoroughly impressed upon me, that I have never again had the complaint in my own colonies, though it has frequently been brought into my apiaries among purchased bees. The experienced eye will at once notice the least suspicion of foul brood, and the only thing to do is to put it out of harm's way at once.

There are many who are not acquainted with the nature of the treacherous disease; but any one in doubt about it will observe that, where any of the larvæ or older brood retains its original color and form, in many cases drying up to a white cinder, there is then no actual disease, even though some of the younger larvæ appear just as rotten as that of the real foul brood; but in the latter case the whole of the dead brood changes color, and becomes a dark putrid mass.

Simple dead brood, as above, will generally disappear during the autumn, or simply by giving a new queen; and there is not the least doubt that it has been this slight malady, and not genuine foul brood, which has sometimes been reported as curing itself. I have never known the real plague to cure itself, though it can be to a certain extent restrained, by an energetic colony with a young queen; and from what I know of the nature of the disease, I never expect to see a self-cure. SAM. SIMMINS.

Rottingdean, Brighton, Eng., Nov. 8, 1887.

Accept our thanks, friend Simmins, for your very kind letter and words of advice. Your statements in reference to the disease in general, agree with our experience. It is possible that some of our neighbors' bees have foul brood, and it is possible that a diseased colony lives in some hollow tree in the woods. In the latter event I do not know how we can remove the source of mischief unless we scour the country in bee-hunting excursions. We have questioned those who keep bees within a mile and a half of us, and they all unite in saying, so far as we have heard from them, that their bees are free from all such infections as we have described to them. If such is the case it is not probable that there is a diseased colony in the woods. I (Ernest) pass among the bees several times a day. I keep track of and advise the boys; and when I have time I work among the bees myself. If a colony of foul brood is found, I direct as to its mode of treatment, and, as a rule, I am on hand to assist. The two apiarists are very careful men; in fact, as careful as I could be myself. So closely were the colonies examined, that, with one or two exceptions, we never found more than one or two infected colonies in an apiary in a single day, and most of the days none at all. Practically speaking, the disease did not exist in our apiary during the summer. But you will urge that foul brood did occasionally manifest itself, and, in consequence of this, there was something in my treatment or management that was not quite right. This may be true; but if so, I plead in defense that, at the solicitation of not a few, I experimented with some of the acid treatments; and while such experiments may have been favorable for the further continuance of foul brood, I am the better able to judge regarding the merits of this or that treatment; and consequently to advise our over 7000 readers when they get into trouble. After having tried the various acid treatments, I feel sure that, for efficacy and dispatch, there is no better method than the starvation plan, coupled with a good antiseptic.

THE FAMILY POCKET-BOOK.

DR. MILLER TELLS WHICH OF THE TWO, WHEN THE TWO ARE WON AND ONE, SHOULD CARRY IT.

FRIEND ROOT:—I'm riled again. On page 743 you say, "But I do think it is every woman's privilege to have the money an article costs, in place of the article itself, whenever she wishes." Now, I just don't think so—at least, not in some cases. Let me give a case in point. My wife wanted her strawberry-bed cleaned out. We had had a severe drought, making the ground hard, and the condition of the bed was such that it would take no little strength to do the required work. I told her to hire the work done. No, she wanted to do the work herself, so she could have the money it cost, to do as she pleased. As nearly as I recollect, the matter was left in a half-settled condition; and before I fairly knew what was going on she had a good share of the bed done, and, like all of her work, it was done in good shape—perhaps better than if the work had been hired. But. For the next 24 hours she was a sick woman, and did not fully get over it for a number of days. In such a case I feel that I have the right to say, "That money must go for the work, and it is not your 'privilege to have the money' the work 'costs, in place of the article itself.'"

But the very fact that a woman may want the money instead of the article itself, is suggestive of a state of affairs that is radically wrong. It brings to mind a good many cases I have known, one of which I will mention. During my boyhood I clerked in a country store, and among our customers was a well-to-do farmer who lived quite near. I don't suppose the man thought he was a tyrant, but he was unwilling to furnish his wife what was really necessary to bring up a large family. So sometimes one of the girls could be seen coming down the back alley, through the barn, into the back door of the store, bringing a pillow-slip full of goose feathers, a roll of butter, or what not, to trade for needed goods, unknown to Mr. Nagel. I can hardly blame a woman, in such a case, even for making herself sick for the sake of getting something she needs very much.

Now, in my judgment there is something radically wrong somewhere, when a woman can spend money only at the pleasure of her liege lord, and must come with a feeling of dread for every dollar she wants. It is a relic of barbarism, or, rather, barbarism itself, to consider the wife as merely a slave or a servant, entitled to a mere pittance, grudgingly doled out, when she wants any money for her own disposal. And when a woman wants the price of an article rather than the article

itself, there is at least a faint suspicion that possibly she does not feel at liberty to put her hand in the common pocket-book and draw therefrom what she may desire.

But I am not starting out on a tirade against mankind. It is womankind I arraign. Whatever may be said about women in general, there are some who seem to have the impression that a husband is a mere machine to drudge and earn money that his wife may have plenty of money to dress up in fine raiment, and sit and fold her lily-white hands in graceful idleness. Deep down in the bottom of the hearts of even the worst of these, there is, however, I believe, a better nature which is buried under only a layer of selfishness; and under favoring circumstances this better nature will come to the surface. The disease, therefore, is not incurable.

There is another disease which, although of an apparently mild type, has this sad feature; it is, so far as I know, incurable. It is a sort of mild insanity, or monomania. I am well acquainted with the symptoms, a case having for a long time been under my observation. The lady in question, sane upon all other subjects, is affected with the delusion that she is entirely free to use as she pleases only such money as she may earn with her own hands, and receive not from her husband, but from some one else, as the reward of her labor; and yet her husband has always given her freely all the money she wanted, and more, insisting that, although he might have received the money, it was just as much hers as his, and she had as truly earned it by doing her share of the work in the life-partnership. Yet she sadly says, "Before I was married I was independent; I earned my own money, and felt entirely free to do as I pleased with it. Now, I can have only what my husband earns; and although my husband is the kindest man in the world, gives me all the money I want without asking what I want it for, still it is not pleasant to feel dependent. Then her husband tries to humor her whim, and offers to pay her stated wages for working for him. But she says, "Oh! that's different. I couldn't take wages from my husband." Sometimes she deludes herself with the pleasing fancy that she is earning something herself in this way: She buys a pig, or something of the kind, takes care of it herself, and then if it sells for $10.00 she feels rich in the possession of $10.00 of her very own. No matter if $11.00 of what she considers her husband's money was paid for the pig and its feed, she takes no note of that, content to think only of the $10.00 that *she has earned*. Is this an isolated case, or is it a type of a class? And is there any cure for such a case?

Marengo, Ill. C. C. MILLER.

Why, friend M., your experience agrees with mine exactly. It is a grand thing for the *children* to get a mania for being independent, and for desiring to earn some money all their very own; but when the *wife* starts out on that tact, it is another thing. Just say to that lady, friend M., that when she is married she and her husband are one, and that therefore the pocket-book is common property. When I got back from the Chicago Convention I found my every-day boots all cleaned up nice, and oiled. I knew they needed it, but I didn't have time to do it; and when I thought of my wife doing that kind of work for her absent husband, I commenced to give her a good scolding. She very meekly informed me, however, that it was all right. She said she found a *dollar and a half* in the pockets of my old clothes, and so it was all square, without any more being said about it. I changed my tactics, and was going to start out again, but finally concluded she was "mistress of the situation."

HONEY-TUMBLERS.

HOW SHALL WE PUT UP JUST ONE POUND OF HONEY, AND HAVE THE TUMBLER EVEN FULL?

FRIEND ROOT:—After reading what you wrote on page 877, in regard to the "false balance," etc., I can not resist the desire to call your attention to something in your own business that is very similar to the false-barrel business which you there so justly condemn. In the summer of 1886 I sent to you for 100 one-pound tumblers, as I wanted to get people to using a little extracted honey. The tumblers that you sent weighed just 14 oz. more when filled than when empty. I wrote you about it, and you answered that my honey was thin. You were mistaken, but I could not very well prove it, so the matter was dropped.

Again, this past summer I sent to you for a barrel of 1-lb. tumblers, hoping to get some that would hold a full pound; but I saw at once they were smaller than those you sent the year before. They will hold 12½ oz., if filled very full. The result is, I have used very few of them, and feel as though I never wanted to use them, as there is a falsehood on every one, for the labels say, "One pound."

In regard to the false-barrel business, you say, "The man who decides to use such barrels is the one who is cheated in the end. But very likely he bought them for honest barrels." I ordered 1-lb. tumblers, paid for them, and can not very well afford to throw them away. As you say, the whole business is abominable in the sight of God and honest men. I know that you do not make the tumblers, but I suppose you sell large quantities of them, and surely you can get the manufacturers to make you a tumbler that will hold a full pound.

Now, in regard to the 1-lb. section: I use sections 7 to the foot, and find that, if full sheets of foundation are used, they will weigh, when filled, 14 oz., average. I sell them by weight, and tell every one they will not weigh quite 1 lb. But they are often retailed from the groceries for pounds, and it is certainly very desirable to have a section that will weigh a full pound. For that reason I am thinking of using 1⅛ sections, and should like to inquire of those who have used them if they will average 1 lb. when used with separators; and if they can get as much honey in them as in the narrower sections.

I see by the bee-papers that many have fed their bees large quantities of sugar syrup for winter stores, but you are offering nothing better than a butter-dish for a feeder. Is it necessary that we should bother with butter-dishes and pepper-boxes, when we have thousands of pounds of syrup to feed? I believe nearly all bee-keepers agree that it

is better to give it all at once. It should not be a very difficult matter to make a wooden feeder holding 25 lbs. that can be set right on the frames of any hive.

I got ten of your 12-lb. shipping-crates last spring, and like them very much. I think I have sold 500 lbs. of honey in those ten crates. I fasten the covers on with a little leather hinge to keep them in place, and it makes a nice covered box for the honey while it is being used in the family, or sold from the store. Put a paper in the bottom, and change it every time you fill the crate, and sandpaper off the outside whenever it is soiled.

My report for the past season is as follows: I had 28 colonies in the spring, and have 40 at the present time; 900 lbs. of comb honey, and 200 of extracted. I am but a novice in the business, as I began three years ago with one colony, and have never bought or sold a colony since.

Those "sermons out of church" are doing a world of good, and that kind of mixing things can never do any harm.

Brother bee-keepers, let us give good weight and measure, pressed down, running over; and don't try to sell glass or wood for honey. In other words, let us do unto others as we would that they should do unto us. A. C. BUGBEE.

Lochiel, Ind., Nov. 28, 1887.

Friend B., I want to get hold of your hand and thank you for the frank manner in which you come right out and tell us of our faults. Nothing could convince me so thoroughly of your sincere friendship as this straightforward manner. You say, in closing, that you know we did not make the tumblers; and you might also add, that we did not sell them, when filled with honey, for a pound of honey. For all that, it is bad business. Please have charity enough, however, to believe me when I say that we had no intention or thought of deceiving when we used these tumblers. There is certainly a very great deal of difference in the specific gravity of honey. John has just brought me a tumbler of each size, half-pound and pound, filled with clover honey. The half-pound holds a little too much; in fact, we have had some pretty severe scoldings because of this fault. One friend says that his customers grumble unless the tumblers are full; but if he fills them full they hold nine ounces. If he puts in exactly half a pound, each tumbler has to be weighed, which is an annoyance and bother. We have had pound tumblers from two different glass-factories, and it is true that the one we are now using holds only 15 ounces. There has never been a tumbler made especially for honey. Well, in hunting up a package for a pound of honey, I found these jelly-tumblers. I believe they are called, among glassware-men, half-pint tumblers; but they hold so much over half a pint, that, with very thick honey filling them clear to the brim, I succeeded in getting in a whole pound, and decided that it is better to use these than to go to the enormous expense of changing dies and machinery to make something a trifle larger. A good many of our customers sell them, filled with honey, at so much a tumblerful. When asked if there is a pound of the honey, they always say, "I believe there is not." I do not know how the jelly-tumbler folks came to strike on any thing so near just what we want. Here it is, however, in almost every market of the world, and it will be very expensive business to get new molds and new machines for making them. And even if we do, the two sizes are so nearly alike they will be constantly getting mixed up. Had we not better take the tumblers that are already in every-day use the world over, almost, and sell the honey at so much a tumblerful? The question *will* come up, however, "How much do they hold?" or, "How much does it lack of being a pound?" and then comes this long string of explanations.

Your concluding words, friend B., are right, and have the right ring; and if there is no other way out of it, we will go to the expense of having dies and tools made to make a tumbler holding a full pound of honey—no more, no less. I think very likely, as you say, I had better have a little more charity for the barrel-makers. I have been told, however, that apple-dealers and producers have had a scant barrel gotten up expressly to humbug their customers.

CHAFF HIVES.

REASONS FOR PREFERRING A ONE-STORY HIVE.

FRIEND ROOT:—I am one of those bee-keepers who believe in outdoor wintering. I also prefer to use the chaff hive all the year. It is a protection from the fiery rays of old Sol, as well as from the frigid breath of Boreas. I do not wish grapevines in my apiary, and I have tried the shade-board and 15-pound stone, and can not tolerate them. Friend Heddon considers that a love of handling these stones is one of the qualifications of a bee keeper. Friend H. will please pardon me, for I think that that is along the same line as the reasoning of the traditional farmer who went to mill on horseback and put a stone in one end of the bag to balance the grist which was in the other end.

If a chaff hive is of the right construction, it answers all purposes with me. I believe, friend Root, you are willing to be criticised, and will listen attentively to any criticisms upon the articles, which you recommend and sell. Now, as I use chaff hives winter and summer, I want one that is convenient and practical. My objections to your chaff hive are, 1. The brood-nest can not be got at when the upper story is full of frames, without removing the 10 or 14 frames as the case may be, and placing them in an empty hive, or standing them against the hive. With my system of management this is a serious fault. 2. When the upper story is emptied you have to fish the brood-frames out from the bottom of a deep hive. 3. The packing around the upper story is not needed—at least, so it seems to me. 4. I dislike the low, loose cover which has to be lifted off and on.

I have overcome these objections by changing the construction of the hive. I use half-inch lumber, which is ship-lapped. The upper story is not packed. The inside decking comes even with the top of the brood-frames. The outer shell is the only part of the hive-body which projects

above the brood-nest. The extracting (or brood) frames are placed in a super, something like one story of your Simplicity hive. This super is placed inside of the upper story of the hive. When I wish to examine a brood-nest I lift out the super and place it on a box or wheelbarrow, if one is near; if not, on the grass.

The hive-cover is hinged to the body, and when I wish to look into a hive I simply turn back the cover until it rests on a couple of brackets which are nailed on the back of the hive. As the cover is the same size as the body, and forms *one-half* of the upper story, when raised it forms two convenient shelves on which to lay tools. Being made in this way the shell of the hive need project only 5 inches above the brood-nest; hence the brood-nest can be easily got at. But the most important point in constructing the hives in this manner is, that they can be made easier and cheaper. Almost any kind of surplus cases may be used in the hive, and almost any size; but I would advise the use of only one size. Now, if I am in error, please correct me.

Allow me to say that I enjoyed the Chicago Convention very much, but sadly missed the smiling countenance of Mrs. Chaddock and P. Benson, A. B. S. W. E. GOULD.

Fremont, Mich., Nov. 25, 1887.

If you will turn back to page 189, March 1st, current volume, you will see that we have been making and selling a hive very similar to the one you describe, and which overcomes all the objections to our large two-story chaff, which you name. There is one other defect which you did not mention; and that is, that tiering up can not be carried up more than two tiers of sections high. As our one-story chaff is perfectly interchangeable with the Simplicity and all its furniture, tiering in the one-story chaff can be practiced as far as circumstances may require.—In regard to hinges for covers, we regard them as unnecessary and expensive. We tried them years ago, and for obvious reasons abandoned them.

USE AND ABUSE OF UNFINISHED SECTIONS.

VALUABLE SUGGESTIONS ON HOW TO DISPOSE OF THEM.

IN the discussion of every question that is brought up in our bee-journals, we have extremists whose advice it would not be wise to accept. Some say, "We have no business to have many unfinished sections, and with proper management there is no need of having them." There will always be quantities of them as long as sections are used, since it is true, that, by a sudden and unexpected ending of the honey-harvest by drought, or by too much rain, the flow is cut off, which circumstance can not be controlled by the bee-keeper. This being true without a possible remedy, it is only necessary to deal with the problem of what shall be done with this uncompleted work. Some have advised burning the sections and melting the combs. Now, this is bad advice, bad economy, and poor judgment. To make a fair living for a family out of the pursuit of apiculture (in most localities) it is wisdom to concede the fact that close, economical management must play an important part in the business. These partly filled sections are the best stock in trade about the apiary. When by actual experience I find that my bees will enter the sections more freely when they contain drawn combs, I want starters of comb, and I want them bad, say what you may about sections filled with foundation.

My first experience in the use of partly filled sections was not satisfactory; and especially was this so with those that had been pretty well filled out the previous season. The honey presented an oldish appearance, causing customers to ask, "Is this not old honey?"

I will now give my plan of working these unfinished sections up into cash. When the honey-harvest is about closing, and work on sections is so slow that the loss is becoming greater from discoloration than is gained by completion, they are at once removed. Those completed are put in crates ready for market. Those almost finished are sold to any who may wish to buy them, at a little less price. What are not disposed of in this way are cut out, put in pans, filling the interstices with extracted honey taken from the poorer finished sections. The pan and all is sold for about full price of nice sections, and no trouble to do it. The partly filled sections, after being nicely cleaned of wax and propolis, are run through the extractor, after which they are returned to cases as before, and stacked up in short tiers. These are placed over or near hives at night, to be cleaned up. They are then stored away in a mouse-proof place until the next season.

Previous to placing these again over the bees, the combs are reduced in thickness so that the depth of the cell is not over one-fourth of an inch. To do this nicely and speedily I got out a piece of sheet iron, smoothed on one side, and just large enough to easily go inside the sections. To the four corners of this are fastened small rods of iron, of a suitable length to permit a small lamp to go under the plate. A good heavy block of wood, having holes to receive the legs of this small table, makes all solid and a nice place for the lamp to rest. Now, by turning on or off the flame, the plate is kept at such a degree of heat that the comb is quickly melted away to the desired thickness. They are now placed in the cases, and when the surplus room is needed by the bees, these sections are given to the strongest colonies, and at once they go to work on them. After the bees have worked on these combs a few days, I examined all other colonies; and where any are found slow about starting, I take four or five of these sections, bees and all, and place them in the center of the case, which will usually start them at once; but if any colony, for lack of bees or other cause, still refuse to go to work, I exchange a full case, which never fails.

By melting away part of the length of the cells, the bees are compelled to add new wax in lengthening them out, which, when finished, will be as fine in texture as though no old comb had been used. If the honey taken from the unfinished sections is not ripe enough to be nice, it must be placed in open vessels in a dry warm airy place, where it will soon become "orthodox" honey. Some advise giving the unfinished sections to light colonies. As long as I can get ten to fifteen cents for this honey, and granulated-sugar syrup for five cents a pound, the latter will be used to supply colonies deficient in stores. J. A. BUCHANAN.

Holliday's Cove, W. Va., Nov. 21, 1887.

We are much obliged to you, friend B., for your suggestions. Your idea in regard to disposing of partly filled sections is good; and where the market is such that it can be retailed in that way, we have no doubt it would pay well. Folks who have a great liking for the good old-fashioned honey, such as our grandfathers used to get, would no doubt even prefer this sort of chunk honey.—In regard to reducing the cell-walls of combs partly drawn out in the sections, you will see that you have come to the same conclusion that was arrived at by the Chicago Convention recently. I don't believe it is profitable to use very many full combs drawn out in the supers; but if you shave or melt it down as you do, it would be practically foundation. Although your plan for reducing the cell-walls is ingenious, I am rather inclined to think I should prefer to use nice clean sections and newly made fdn. It is a good deal of labor to fix over and prepare all unfinished sections in the manner you describe; at least so it seems to me; and if you count your time worth any thing while doing it, could you not almost afford to purchase new sections and clean fdn.?

THE JAPANESE BUCKWHEAT.

ITS LARGE YIELDS, AND ITS MERITS AS COMPARED WITH OTHER BUCKWHEAT.

IT is a little remarkable, that the reports so far are quite uniformly favorable to this new buckwheat. Its yield, when compared with other varieties, is considerably ahead. To this there is but a single exception in this long list of reports, and that is the one from our friend Abbott L. Swinson, Goldsboro, N. C.

27½ LBS. FROM FOUR OUNCES.

You ask for reports from those who have tried the Japanese buckwheat. My report is, from ¼ lb. bought of you I harvested 27½ lbs. C. J. ARNTS.

Meshoppen, Pa., Nov. 11, 1887.

TEN BUSHELS FROM ONE HALF-PECK.

I sowed ½ peck this season, which I purchased of Mr. Peter Henderson, and I thrashed ten bushels of very fine buckwheat. J. C. GALLUP.

Smithport, Pa., Nov. 21, 1887.

A YIELD OF ONE QUART FROM A FIVE-CENT PACKAGE.

I got a five-cent package of Japanese buckwheat of you. During the dry weather I watered it quite often, and I got about a quart. I can not tell exactly, for I don't know just how much the hens ate.

Pipestone, Mich., Nov. 24, 1887. G. CLARKE.

TEN BUSHELS FROM ONE PECK.

I sowed one peck of the new buckwheat on very dry sand, and thrashed ten bushels. I think the old kind would not have given any crop at all, on account of the drought. My bees did not work on it very much. I wish I had bought a bushel of you, and sown it on better land. H. P. LANGDON.

East Constable, N. Y., Nov. 21, 1887.

ONE AND ONE-HALF BUSHELS FROM A POUND OF SEED.

I sowed 1 lb. of Japanese buckwheat, and, in spite of an early frost, drought, and a flock of 20 young guinea fowls, I thrashed out 1½ bushels of fine, large, and sound seed. I think it is the thing to raise, both for bees and flour.

Owosso, Mich. O. G. JOSENHANS.

ONLY SIX POUNDS FROM ONE FOURTH-POUND.

I sowed 4 oz. June 22, and I believe it would have been a total failure had I not carried water to keep the seed from burning up, so I raised only 6 lbs. of seed from the 4 oz. S. HEATH.

Rimer, Pa., Nov. 24, 1887.

SEVEN AND ONE-HALF POUNDS FROM ONE OUNCE.

On the 11th of July, last, I received from you 4 lbs., and gave it to the tenant on my brother's farm to sow, reserving one ounce to sow in the garden. From the ounce I harvested 7½ lbs., nice plump grain. That sown on the farm was destroyed by a large flock of turkeys; but I think it would have made a fair yield. JESSE BRADY.

Little Rock, Ill.

ONE BUSHEL FROM A QUARTER-POUND OF SEED.

I see that you wanted all those who got Japanese buckwheat of you to report how much they had. I sowed my ¼-lb. the 23d of June, and it filled through the hot weather, and I harvested one bushel. My father sowed 1⅛ acres of black buckwheat, and got 50 bushels. I call that pretty good.

PERLEY LANGWORTHY.

Riceville, Pa., Nov. 24, 1887.

THE JAPANESE AHEAD OF THE SILVERHULL.

I sowed a pound of Japanese buckwheat, from which I thrashed 16 pounds of clean seed. Silverhull buckwheat alongside of it yielded 5 bushels to one sown, so you see the Japanese came out ahead of the silverhull. The weather was very dry, and I think it did very well with the chance it had.

Barnes, Kan., Nov. 26, 1887. CONRAD GEHRING.

ONE-FOURTH POUND YIELDED NINE POUNDS.

I bought of you ¼-lb. of Japanese buckwheat. I dropped about half of it in drills in the garden, and watered it once, so that it came up and produced a crop of 9 lbs., which I consider pretty good for this dry season. I drilled two acres with the common in the field, and it did not yield any thing, although it was pretty well manured with stable manure.

We have taken 180 lbs. of extracted and 100 lbs. of comb honey from 21 stands of bees.

Spring Valley, O., Nov. 26, 1887. G. W. THOMAS.

JAPANESE YIELDED 40 BUSHELS TO THE ACRE, AND THE SILVERHULL ONLY 27.

I purchased of you one peck, 12½ lbs., of Japanese buckwheat, and on the first of July I sowed it on 50 fifty rods of land; and on the same day in the same field, and no difference in the land, and no fertilizer of any kind used, I sowed three acres of silverhull buckwheat. On the ninth day of September I cut, raked, and put up the Japanese buckwheat. On the 24th of September we thrashed it, and had 12½ bushels of clean buckwheat, one bushel for every pound of seed sown, or at the rate of forty bushels per acre. On the 24th and 25th of September we cut the silverhull. It was good. We had 82 bushels on three acres, or a little over 27 bushels per acre. B. B. TUTHILL.

Gt. Bend, Pa.

NINE AND A HALF BUSHELS FROM FIVE POUNDS.

We bought five pounds of seed of you last spring. Wishing to test it we prepared a plot of about ¼ acre by putting on two loads of manure. On the rest of the field, about 5 acres of silverhull was

sown, without manure. The yield from silverhull was 95 bushels, or about 19 bushels per acre; from the Japanese, 9½ bushels, or at the rate of 38 bushels per acre. Both kinds suffered from frost, the Japanese most, as the large straw will have green kernels after the smaller silverhull is all dried up. We have 9½ bushels. None of it is for sale.

McClure, N. Y., Nov. 21, 1887. R. B. FLETCHER.

JAPANESE YIELDING OVER TWICE AS MUCH BUCKWHEAT AS THE SILVERHULL UNDER THE SAME TREATMENT.

I sowed a peck (purchased of you) side by side with about ten quarts of silverhull. The soil and preparation were the same for both, and both were sown on the same day, and also cut on the same day. I could not see that the Japanese ripened any sooner than the silverhull. I did not receive half a crop of either. When thrashed, the silverhull yielded 3½ bushels, and the Japanese over 6¼ bushels. This, I think, proves pretty conclusively that it is superior to what we formerly considered best.

Sherman, Pa., Nov. 28, 1887. WILLIS EARLY.

THE MOST PRODUCTIVE.

The Japanese buckwheat is the most productive buckwheat that ever came under my notice. I sent to you for three five-cent packets last winter. I let a neighbor have one; the other two I sowed on four square rods of land, about the first of July. It was very dry here last summer, and the seed did not start until we got a little rain, about three weeks after. The yield was 1¾ bushels. As a honey-plant I can not say much about it. The bees worked on it but little; but then they did not work on clover or basswood as they did last year. The honey crop was very poor this year. The average is about 35 lbs. of comb honey per colony. E. WOOLLEY.

Kimble, Minn., Nov. 20, 1887.

JAPANESE YIELDING AT THE RATE OF 80 BUSHELS TO THE ACRE, THE COMMON BUCKWHEAT LESS THAN 6 BUSHELS.

You sent me ¼ lb. of Japanese buckwheat. I drilled it six inches apart in rows, on just 235 square feet of ground. I had a deal of trouble to save any, on account of the chickens; but I saved 20½ lbs. of clean seed, and a few quarts in the chaff. I cleaned it in the wind, which came in gusts, but I gathered it chaff and all. Now please figure: I have fully half a bushel all together, on less than one square rod. That means 80 bushels per acre. I had 22½ bushels of common buckwheat, on four acres, or about 5½ bushels per acre, and none was any better in the neighborhood. To say the least, I am highly delighted with the Japanese. JOHN E. DODGE.

Little Cooley, Pa., Dec. 1, 1887.

JAPANESE YIELDING FIVE TIMES AS MUCH AS THE COMMON BUCKWHEAT.

I sowed the 1 lb. of Japanese on 3½ rods of ground. It ought to have been on 8 or 10 rods. It was much too thick. It was sown early in the season, on fair loam land, heavily top-dressed with hog-manure harrowed in. The ground was then raked over, and the buckwheat put in with a garden drill. It was hoed twice and weeds pulled out of the rows. Bees worked well on it, but it was so very dry and hot that it did not fill much until rain came late in the season, but more even then than the other buckwheat. After the rains came it filled very full, and I thrashed 61 lbs. of nice clean buckwheat. I might have had much more if I had put it on more ground. I think it yielded five times as much as the common buckwheat, but that was sown broadcast on not quite so good land, and neither top dressed nor hoed. E. GREEN.

Montague, Mich., Nov. 21, 1887.

862 KERNELS COUNTED ON ONE STALK.

I got ¼ pound of Japanese buckwheat from you. I sowed it in the last days of June, and it was so dry that it did not come up till about the last of July. I almost gave up all hopes of it; but as a constant dropping will wear a stone, at last it came. I watched it almost daily. It grew very large, with leaves almost as large as my hand, and I believe nearly 4 feet high. When it blossomed it made me think of a "snowball," such as we have in our dooryard. I never saw the like, the way it filled out. I had my neighbors look at it, and they said the same. To my great disappointment, the frost came while it was yet in bloom, and destroyed it almost completely. Yet with all the drawbacks, I had one good rounding bushel. I don't call that bad for ¼ pound, and a poor buckwheat year. Even at that rate, 48 pounds, or one bushel, would have yielded 192 bushels. When I was gathering it I took one stalk, and counted all the kernels. I thought it would make good seed. They numbered 862. I have no doubt but that if the frost had held off a little longer there would have been some stalks holding as many as 1000 or even 1200 kernels. S. D. KELLER.

Winterburn, Pa., Nov. 29, 1887.

If you will turn to page 874 of Nov. 15th issue you will see that one of the friends counted 1153 kernels from one stalk, so your estimates are pretty close.

TWO BUSHELS AND THREE PECKS OF JAPANESE, AGAINST ONE AND ONE-HALF OF THE COMMON BUCKWHEAT, WITH THE SAME TREATMENT.

It seems as if the Japanese buckwheat frightened everybody, since they did not report. Perhaps they have been shocked so bad by its productiveness that they have not overcome it sufficiently so that they could not write any sooner. I will give you my report. I sowed 1 lb. on a strip 65 small steps long and seven steps wide. When thrashed I had 2 bushels of nice clean buckwheat, and about 3 pecks of light grains that did not get ripe, in front of the grain-fan. This was the second cleaning. At the first cleaning I can not say how many light grains blew out. About the 6th of July I turned the rye stubble to sow it on. It was so dry that I could not sow it until about the 12th or 13th of July. The late sowing and the dry season and early frost, are what made so many light grains; but what was full and ripe were very nice. I really think it is larger in the grain than what the seed was; I was surprised when the grains began to hang on. It hung in clusters. I think it should be called the cluster buckwheat. I sowed a strip one side of this, the same length, and witdh and at the same time of the buckwheat I have been raising for some time, and which I thought did well. That gave me, when thrashed and cleaned, only three half-pecks. That settles that kind of buckwheat for me. The bees worked on one as much as on the other.

Those vegetable-seeds I got of you in the spring came up to the mark. I shall want more next spring. WM. H. WEISER.

York, Pa., Dec. 3, 1887.

THE JAPANESE BUCKWHEAT INFERIOR TO THE SILVERHULL.

On page 833 you ask for reports from those who bought Japanese buckwheat of you during the past season. Well, here goes for the Tar-Heel apiarian's experience with the plant. About June 18th I planted the peck I got of you on something near one-third of an acre, that was highly fertilized with cotton-seeds, kainit, and acid-phosphate. It grew to be about 32 to 36 inches high. It had plenty of blossoms, though it was a rare thing to see a bee on any of them. Very little grain was matured—so little, in fact, that I did not think it worth while to save any of it. There was plenty of rain, and there was no honey being gathered from any other source.

KAFFIR CORN AS A HONEY-PLANT.

By the way, the much-prized "Kaffir corn," of which I grew about 2¾ acres in the same field, did me much more good in the way of furnishing bee-food, for it supplied them with large quantities of pollen, and they worked it very extensively; no honey that I could detect. It has a fine quick growth of grain and forage food. It matures grain in about 80 days.

The half-bushel of silverhull buckwheat I got of you, and planted early in May, on much poorer land than I did the Japanese, furnished the bees a large quantity of pollen, and quite a lot of honey too, and matured three times as much seed, though it grew only about 16 to 20 inches high. It furnished flowers four times as long as the Japanese did, and bees were working on the flowers of it at the time that the Japanese began to bloom. I should say, that for this climate the silverhull buckwheat is much superior to the Japanese buckwheat as a honey or grain producer.

I have put up, ready for winter, 60 colonies.

Goldsboro, N. C. ABBOTT L. SWINSON.

Friend S., you should remember that buckwheat does not stand hot weather, and I doubt if you can get either seed or honey of any account from any kind of buckwheat sown so near the middle of June, in your locality. The silverhull you sowed in May had the benefit of the cooler weather earlier in the season. We are glad to have your unfavorable report nevertheless.

THE EUCALYPTUS HONEY OF TASMANIA.

SOMETHING FURTHER IN REGARD TO THE MATTER MENTIONED ON PAGE 875.

DEAR FRIEND ROOT:—Referring to your remarks upon the great black-honey discovery in Tasmania, in GLEANINGS for Nov. 15, I will say that, by reference to the International Cyclopedia, Vol. XIV., page 217, you will find that the blue gum (*Eucalyptus globulus*, a species of eucalyptus which we frequently use as a medicine in this country) reaches a height of 350 ft., with corresponding girth, on the island of Tasmania. For further information I refer you to an editorial article in June number of the *Therapeutic Gazette*, which I send you by this mail.

W. MCKAY DOUGAN, M. D.

Santee Agency, Neb., Nov. 22, 1887.

We have read the article referred to by friend M., and will say to our readers that the statement of the *Therapeutic* agrees with what has been already published in GLEANINGS; viz., that as much as 11,000 lbs. of honey was taken from one tree. Although this black honey may never be used for food, if the statements are true it promises to be a valuable article of medicine. I would respectfully beg to get something directly from our subscribers in Tasmania, if any of them can give us any light in regard to the matter.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

A GOOD POINTER FOR THE STATISTIC BUSINESS.

FRIEND ROOT:—Your supposition as to the existence of a border-land, fruitful in honey, somewhere between the rain-drenched coast of Maryland and the drought-stricken district of Ohio and westward, is correct. It lies through Central New York, and the contiguous portions of Pennsylvania. To this the wide-awakes of New York city could testify, if they would, since their honey-hawks did, at an early date, sail out, hover over, and scoop from the said section hundred of tons of beautiful honey, at a low figure for this season. This adds weighty testimony to the yearly proof we have, of the great need of our bee-journals being enabled to make a correct weekly report from all parts of the field, by way of town and country secretaries of bee-associations. This should be done for a period of at least six months of the year—from June first to December first. It is to be hoped that our editors will take advantage of this season's experience to impress upon their readers the importance of this help in obtaining fair prices for honey. Our bee-associations the coming winter should make it a prominent theme in their deliberations. The organization of all bee-men, wherever practical, into societies, to gather and forward all information pertaining to their interests as honey-producers, should be effected. The burden of the work will fall where it should—upon the producer.

Three things I have learned this year, which I regard of great value: Tiering up; the use of the slatted honey-board, and the bee-space above the body of the hive. You are enabled thereby to save bees, time, strength, honey, and the good nature of the bees. J. MEKBEL.

Poplar Ridge, N. Y.

HOW MANY POUNDS OF HONEY TO MAKE ONE POUND OF WAX?

On p. 171 of GLEANINGS it is claimed that it takes six pounds of honey to make one of wax. I think it takes more here in our locality. For several years we have had very poor honey crops—so poor that a swarm of bees hived in an empty hive would not make enough to winter on, while one just as good, hived on full combs and foundation, would make 40 pounds of surplus. This would show that, while the swarm hived on empty frames made two pounds of wax, the one hived on full frames made 40 lbs. of honey. CHAS. H. TIMMERMAN.

Fayette, Iowa, Nov. 20, 1887.

The old estimate, as made by experimenters years ago, was that it took twenty pounds of honey to produce one of wax, and your experiments seem to again reconfirm it.

More recently, Doolittle, Viallon, and Hasty, have arrived at the conclusion, based upon various observations, that the ratio is about 7 to 1. This is a hard question to get at exactly.

RAPE.

A little experiment again with rape convinces me more thoroughly than ever that it is a grand fall pasture for bees. I sowed a little patch the 16th of August, after early potatoes. It was too late, and did not blossom much, but the bees work on what there is every day that they can fly, even after severe freezing weather and snow-storms. I am going to let it be until spring, and see if that which did not grow up and blossom this fall will do so in the spring. E. GREEN.

Montague, Mich., Nov. 21, 1887.

HOW AN A B C SCHOLAR SOLD 22,000 LBS. OF HONEY ON THE ROAD.

Editor Gleanings:—I live at Dewitt, Clinton Co., Ia. My boy captured one swarm of bees. I bought three more last year. They increased to nine, and gave me 1500 lbs. of honey in one-pound sections. Not knowing what to do with it I conceived the idea of buying more and going out and selling it. The first trip, I sold, in nine days, 9000 lbs.; the next trip, I sold 7000 lbs. My business calling my attention, I got a man to make the third trip. He sold over 6000 lbs. This year I have 25 swarms of bees; have taken from the hives 300 lbs. of section honey, in 1-lb. sections. My bees have honey enough to winter on, and from last year's transactions I have received orders for about 10,000 lbs. of honey, which I am not able to furnish, on account of the scarcity of honey in this section. I will now refer to our own and California honey.

I came in direct competition with California honey, both comb and extracted, and I will say the eastern bee-keepers must confine their efforts to raising comb honey. California can put extracted honey on the market for less money than we can raise it, and it is a very fine article; but the valley of the Mississippi River can beat the world on white-clover honey. The flavor can not be surpassed. It is thicker than the California honey; the comb bears shipping better, and I think our white-clover honey superior to any raised in California, whereas I can not say the same of the extracted. The flavor of our extracted is superior to theirs, but they can furnish it for less money than we. J. M. JACOBS.

Dewitt, Ia., Nov., 1887.

SHEETS OF WAX FOR FOUNDATION; HOW TO KEEP THEM FROM STICKING TO THE DIPPING-BOARDS.

Friend Root:—Use salt brine, weak or strong, tepid or otherwise, for the dipping-boards, and there will be no more trouble with the wax sticking to them. Try this preparation, and you will be pleased with the results. When the brine is used, it matters not about the condition of the dipping-boards—whether rough or smooth, whether of soft or hard wood, nor whether the edges are sharp or square. *Temper* the wax sheets in warm brine-water before running them through the machine. Try this, and it may, in the future, help you to dispense, in a measure, with lye, starch, washing-fluid, and all other lubricators. Brine-water is both inexpensive and unobjectionable; besides, it is precisely what bees like and should have. For divers reasons I think the foregoing discovery should be made public, and not be kept a secret any longer. Try it, reader, and report.

M. M. BALDRIDGE.

St. Charles, Ills., Nov., 1887.

LATE POLLEN-GATHERING; IS IT PROFITABLE TO CONTRACT THE BROOD-CHAMBER TO LESS THAN TEN FRAMES?

My bees are at this late date (Nov. 26) bringing in pollen at quite a lively rate; the pollen is of a very light yellow color; and where the bees get it is quite a mystery to me. I can not think that they get it from any natural source, for only last week the mercury was down to 15° above zero. Another peculiarity of the season is, that my best colonies still have drones flying—something unusual for this latitude in November.

I wonder if the answers to question No. 18 have puzzled others as they have puzzled me. When two bee-men disagree, it is common to say that "difference in locality makes a great difference," and so I suppose it is in this case. I can readily see that the bees could be started in the surplus apartment *earlier* by contracting, but I can't see where the *gain* comes in. My experience proves to me that it pays better to use ten L. frames in the brood-chamber; and it seems to me that I wouldn't give much for the queen that would be contented with five brood-combs. My bees usually have eight or ten combs of brood at the beginning of the honey season; and in tiering up for extracted honey it is not unusual to find as many as eighteen combs of brood in one hive. What would be the result if such a queen were confined to four or five combs? Is it all "difference in locality"?

WALTER S. POUDER.

Groesbeck, O., Nov. 26, 1887.

THE SCRUBBING MOTION OF BEES—A POSSIBLE EXPLANATION.

I think I can answer Mr. Hanson, of Barron, Wis., who asks, on page 786, as to the "scrubbing motion" of bees at the entrance of the hive. Mr. H. says, "They seem to open their mouths and shut them as though a mouthful were gathered every time they move up and down; but close watching develops the fact that they do nothing." At one time I was very much puzzled by the peculiar actions described above; but just as I had come to about the conclusion contained in your foot-note to Mr. H.'s article I discovered what I believe to be a true solution of the apparent mystery. I noticed that it was when much moisture was in the air that they were engaged in this manner—generally in the evening and the early morning. Even colonies that worked very hard through the day would act thus as soon as it became too late to gather honey, and I think it is the water they are after. Bees know how to appreciate a good thing when they have it—a supply of nice pure water right at their door. The dew, or moisture, gathers in particles too minute to be observed by the naked eye, and the bees "pick it up" just about as fast as it forms. The fact that Mr. H.'s bees gathered no surplus does not prove that it was on account of the mania they *seemed* to have of "moving up and down all together in a see-saw motion." There may have been many other reasons why "they did nothing last year." I once spent six weeks visiting friends in Barron Co., and I think it ought to be a good locali-

ty for honey. Were your hives properly shaded, Mr. H.? and in what condition was your brood-chamber during the time those bees did nothing? Was it not full of honey? I see your letter is dated June 17. What did those colonies do *this* summer? I should be glad to know. J. F. DUNN.

Ridgeway, Welland Co., Ont., Can.

REPORTS ENCOURAGING.

AN A B C SCHOLAR'S REPORT OF THE CLASS OF 1887; A RETURN OF $5.75 PER HIVE.

ON Feb. 1st, 1887, I bought out an old apiary of eight stands, with extra hives, etc., and moved them 100 yds. Mar. 1st I raised three Italian queens, and divided three old colonies for the new queens. This started robbing, and I lost two stands entirely, and several others were weakened before I got them under control. April 1st I moved them 125 miles by freight. There were no swarms, on account of drought and bad management.

Bees are now in winter quarters, and cover ten L. frames and lie out nights. Such rousing swarms I never saw, and they have from 30 to 40 pounds of winter stores per hive. My ledger shows the following account:

Dr. To total cost	$79.45	
Cr. By 400 lbs. ext. honey sold @ 8½,		$34.00
" extra hives, fdn., etc.,		$18.10
Add invoice of stock on hand,		$67.70
Loss and gain to balance	$45.35	
	$119.80	$119.80

Will an average of 50 pounds of honey per hive do for this dry year, for a beginner? Will a profit of $5.75 per hive justify my becoming an apiarist?

Converse, Tex., Nov. 10, 1887. E. P. TICKNOR.

We should think so.

I started last spring with 3 swarms. I secured 100 pounds of honey, and sold it at 12½ cents per lb. I have now 8 swarms in good order for winter. It was very dry here this summer.

Marine City, Mich. G. J. VOLLMAR.

In the fall of 1886 I bought 15 colonies of bees, and in the spring I had but 11. I increased these to 23, by natural swarming, and not one left for the woods. Nine gave me very nearly 200 lbs. of comb honey. H. EARHART.

Counter, Ind.

I have my bees in nice trim for winter. They averaged 25 lbs. of comb honey per colony this season; last season, 100 lbs. I am selling my honey at 25 cents per pound, in one-pound sections.

New Derry, Pa. P. R. CYPHERT.

ONE HUNDRED AND TWENTY BARRELS OF EXTRACTED, AND 7000 LBS. OF COMB HONEY.

I have no reason to complain of the season here. I had 120 barrels of honey, 340 lbs. each, and 7000 lbs. of section honey. I have over 400 colonies now.

W. L. COGGSHELL.

West Groton, N. Y., Nov. 14, 1887.

I sold my comb honey for 23 cents in Milwaukee, of which I had 3200 lbs. I also had 8 bbls. of extracted. I feel as if I had been paid for my trouble this year. L. H. BALDWIN.

Hingham, Wis., Nov. 4, 1887.

REPORTS DISCOURAGING.

I HAD 20 colonies in good order this spring, from which I expected to get a good lot of honey; but instead of this I did not get one pound of surplus, and only two natural swarms. I had to feed about all summer. Up to Sept. 20, when goldenrod came in bloom, I think there was not a single cell of sealed honey in my yard.

Somerset, Mass., Oct. 4, 1887. N. S. DAVIS.

The honey crop in this and adjoining vicinities has been a complete failure this year; in fact, it is about the worst ever known in these parts. However, there has been an abundant crop of goldenrod this fall. M. B. MOORE.

Morgan, Ky.

The season has been poor. The drought, that so affected the yield of honey, also cut farm crops short; but I have not heard a bee-keeper speak discouragingly. We intend to make it up next year.

Ridgeway, N. Y. GRANT SCOFIELD.

This has been the poorest season for bees that I have ever seen. Some have lost all of their new swarms. I haven't lost any, and won't, on account of their not having any thing to eat.

Paris, Ill. J. P. ADAMS.

Bees did rather poorly the past season in this part. We got 400 lbs. of extracted honey from 30 hives; quality fine, and increase a little. There was a fine flow late in the fall from asters and goldenrod. All are in very good trim for winter. The summer was too dry for a good honey-flow. Corn and potatoes were but little more than half a crop. Wheat, oats, and all early crops were good.

Disco, Tenn., Nov. 7, 1887. S. L. GREER.

LAST YEAR'S WINTER LOSSES.

The present has been a very poor year for bees. A great many died during last winter. I suppose it was owing to short supplies the fall previous. I inclose you a list of some of the losses that have come to my notice:

George Wetzel,	fall count,	12;	spring count,	6.		
Jacob Liddick,	"	"	5;	"	"	2.
Levi Seiders,	"	"	24;	"	"	2.
S. Hockley,	"	"	20;	"	"	7.
S. McKinzie,	"	"	3;	"	"	1.
H. Snyder,	"	"	4;	"	"	2.
M. Tuland,	"	"	8;	"	"	4.
David Boyd,	"	"	13;	"	"	7.
John Young,	"	"	10;	"	"	5.
S. Rutter,	"	"	6;	"	"	3.

This spring, during fruit blossom we had a bright spell, followed by another continued wet spell during the blossoming of raspberries and small fruit. I had 8, fall count, and brought all through in good shape. A. L. LANE.

Duncannon, Pa.

A LATE FLOW FROM ASTER.

This has been a poor honey season. The fore part of the season was very wet, and the latter part very dry. I began to think my little pets would die if I did not feed them; but I was saved that trouble. We have a new fall weed that is spreading all over the country here, and it begins to bloom about the 1st of October, and lasts three or four weeks, and the bees just roar on it as they do on a buckwheat field. Some of my late swarms filled their combs

clear full, not leaving any room for brood. If the weather had been warm I do not know what they would have done; but it was cold and frosty a greater part of the time, so they could not get out.

G. B. JOHNSON.

Ellenboro, W. Va., Nov. 5, 1887.

The fall weed you refer to was probably aster. See reports in the September and October issues.

OUR QUESTION-BOX,

With Replies from our best Authorities on Bees.

All queries sent in for this department should be briefly stated, and free from any possible ambiguity. The question or questions should be written upon a separate slip of paper, and marked, "For Our Question-Box."

QUESTION NO. 22.—*If an out-apiary be situated near a farmer's house, what compensation, in dollars and cents, ought he or the members of his family to receive for hiving a swarm, in the absence of the owner? In general, what do you consider it worth to hive a swarm for some one else?*

Seventy-five cents. DADANT & SON.

See answer to No. 19. O. O. POPPLETON.

I consider it worth 50 cents to hive a swarm.

MRS. L. HARRISON.

Twenty-five cents would be enough.

W. Z. HUTCHINSON.

About 25 cents; but if the hiver is not satisfied, give him more until he is satisfied. R. WILKIN.

Fifty cents, especially if they do a little watching to get the chance to earn that 50 cents.

JAMES HEDDON.

I have always paid 25 cents to any one notifying me of a swarm, but never had occasion to have any one hive them. PAUL L. VIALLON.

From 25 to 50 cents per swarm, according to the number of colonies. I usually hire some boy by the month, at $10 to $15 per month.

GEO. GRIMM.

I do not think I would allow swarming in out-apiaries. I should say 25 cents. It may be worth from five cents to a dollar, according to circumstances. JAMES A. GREEN.

1. If every thing is in readiness, and the queen's wing is clipped (as it should be), and the party to do the hiving is near by, ten cents would be good pay. 2. That would depend upon the time it would take.

DR. A. B. MASON.

That depends on many things, such as fear of bees, tall trees to climb, distance of farmer's work from bees, etc. Pay the farmer what he asks, or a little more, and then he will work for your interests. If you think you can not afford to pay his price, move on to the next. G. M. DOOLITTLE.

Why, bless your heart, "It is more blessed to give than to receive." I should expect a warm thank you, and I am sure I should get many kind returns. I have yet to live where the people are not more than ready to reciprocate any such neighborly action. A. J. COOK.

They should have about 50 cents a swarm. To the second question, I am somewhat tempted to say five dollars. You see, the whole village is looking on. The bees have been thoroughly riled by the amateur practice of divers and sundry volunteers. The hive, if there is one, is in no condition to hold even guinea-pigs; and not an apiarian tool or convenience within a mile. E. E. HASTY.

If I am not mistaken, Adam Grimm paid about 75 cents a swarm. In my out-apiaries there is no one to watch for swarms, nor at home either, for that matter; but in the Wilson apiary, Mary persists in hiving any swarm she happens to see out, and then I scold her for it. I think an expert might hive swarms for 50 cents each. I couldn't do it for four times that. C. C. MILLER.

1. If an out-apiary be run for extracted honey, there is no necessity for any swarms to be hived in the absence of the owner, as there should be no swarms to hive. 2. If a swarm were settled on a low bush, not over 8 feet high, I would hive them for 25 cents, if I were there ready; but if I were called to leave other work it would make a difference of the value of time in going and coming from work, etc. In the most of our out-apiaries there is tall timber adjoining the apiary, and swarms clustering in the tops of those trees. It would be more than the swarm is worth to hive it. E. FRANCE.

QUESTION NO. 23.—*What rent should be paid for the use of ground for an out-apiary, for one season? What amount have you been in the habit of paying?*

See answer to No. 19. O. O. POPPLETON.

It depends on circumstances.

W. Z. HUTCHINSON.

From 15 to 25 dollars per year. GEO. GRIMM.

No experience. Offer him fifty pounds of extracted honey. E. E. HASTY.

Not more rent than if it were used for any other purpose. I never rented any.

PAUL L. VIALLON.

That would depend upon the amount of land used, and locality. I never rented any.

MRS. L. HARRISON.

We pay one-fifth of the honey and 75 cents per swarm hived. We do all the other work ourselves.

DADANT & SON.

I have had no out-apiary, but can get plenty of room for apiaries of one hundred colonies for five dollars. DR. A. B. MASON.

The same as would be paid for the ground for any other purpose, plus the annoyance caused the owner by the bees. G. M. DOOLITTLE.

I have always owned the ground my out-apiaries occupied. I would pay the same rental for ground that I would for any other purpose.

JAMES HEDDON.

For the use of ground alone, I think eight or ten dollars would be enough. I have never paid any rent, except in presents of bees and honey. The owners of the ground always seemed glad to have the bees there. JAMES A. GREEN.

I have no experience; but I think almost nothing. I think any farmer would be benefited by the presence of the bees, and could well afford the space, unless he or his neighbors keep bees. The bees are no damage, and surely the rental should be only nominal. A. J. COOK.

For 25 or 50 hives in ordinary location, where they are not an annoyance, $10 or $15. In a good location, where you can keep three or four hundred hives of bees, and have the exclusive control of the bee-pasturage within a radius of three miles, as can be done in some locations in California, $100 is a moderate rent. R. WILKIN.

We pay 25 cents for each colony, spring count. We have no trouble in getting all the places we want at that price. The owner has nothing to do with the bees. We do all the work. All five of our out-apiaries are used by the owners of the land for pastures for farm stock, horses, cattle, pigs, sheep, etc., including poultry. E. FRANCE.

Perhaps the same rent as would be paid for the same ground for any other purpose, and more, if any inconvenience is caused by the presence of the bees. None of the good people where my out-apiaries are have ever taken any rent, and grumble when I insist on supplying them with honey.
C. C. MILLER.

QUESTION NO. 24.—*When one possesses a series of out-apiaries, is it better for him to try to winter the bees in their several locations, or to cart them all home and winter them in one location? Which way have you been in the habit of doing?*

See answer to No. 19. O. O. POPPLETON.

Both. It is a matter of convenience.
GEO. GRIMM.

We always winter them on their summer stands, in California. R. WILKIN.

If I owned out-apiaries, I don't think I should do much carting of them home to winter them.
W. Z. HUTCHINSON.

I have had no experience, but I should try to winter them where they were, if I had such apiaries. G. M. DOOLITTLE.

As we winter our bees on their summer stands just as they stood all summer, I have not had experience in the matter. PAUL L. VIALLON.

I have been in the habit of wintering my bees in their own apiaries, and fully believe it to be the best way. JAMES HEDDON.

In their several locations. Never put your eggs all in one basket, unless obliged to; half in the cellar, and half upon their summer stands.
MRS. L. HARRISON.

I should prefer wintering in their several locations, if there were good cellars or other repository to do it in; if not I should cart them home.
DR. A. B. MASON.

Winter them where they are. That is what we do. It is too great an expense to haul them home, and it does not pay. DADANT & SON.

That depends; I have always carted mine back and forth, but I should much prefer to leave them, if I were where I felt safe in wintering outdoors.
C. C. MILLER.

Every apiary should be wintered in its respective location. To cart the colonies home and out again in spring is unnecessary work, and an unwholesome job for the bees. I winter on my summer stands, in single-walled hives, with a straw mat on the brood-chamber, and the entrance wide open.
CHAS. F. MUTH.

I have had no experience. D. A. Jones winters the colonies of each apiary at that apiary. I should think that best, as I am sure very cheap and safe depositories could be made, and the expense for a term of years be less than to move the colonies. However, I am very likely mistaken. A. J. COOK.

With our quadruple chaff-lined hives and our selected locations, we prefer to leave them on their summer stands. We never move them to winter. It would be a big job to cart them all home, and then back again in spring. I would not have my bees carted over the roads and back again in spring, if a man would do the work for nothing. E. FRANCE.

Circumstances would vary the case very much. If you winter on summer stands, do not move them unless thieves abound, or some special consideration demands it. Hauling 50 hives of bees six miles, and then back again in the spring, makes two long, undesirable, and expensive jobs. Think twice, or three times before you undertake it, even to get them into an extra-good cellar. E. E. HASTY.

That depends on the mode of wintering as well as on the kind of hives. If the hives can be easily put in shape for hauling, I think it will pay to bring them home, especially if they are to be wintered in the cellar. They should be taken back as soon as pollen comes in the spring. I have tried both ways. With ordinary hives the moving was too troublesome. JAMES A. GREEN.

Perhaps the friends by this time will have noticed in this department that we are putting the questions into groups, each group or groups taking up and centering upon one subject. Question No. 24 closes the six questions on the subject of out-apiaries. It is true, some of the replies have been somewhat indefinite—necessarily so, perhaps, because it is impossible to give a direct answer in all cases; but even indefinite replies, when put together, boiled down and sifted, give pretty nearly a direct answer. We shall continue to group the questions into subjects, for a time at least. In regard to question No. 22, suppose we get at the cost of hiving a swarm in this way: In general, charge on the basis of 50 cents per hour. With a few exceptions it would not take more than half an hour, and in a majority of cases not over 15 minutes, if you have got every thing handy, empty hives, tools, etc. Some colonies might cluster on a limb 12 feet or more from the ground, in which case it might be quite difficult to take them down. When it is necessary to use a ladder, suppose we allow 25 cents extra for a swarm, in addition to the time occupied in swarming it; where there is much difficult climbing, another 25 cents. This would bring the price of hiving all the way from 10 cents up to perhaps a dollar or even two dollars, the price being regulated according to the time spent, and the difficulty in reaching the swarm.—We are very much obliged for the replies to No. 23. Those who intend to locate out-apiaries will then have some sort of a basis to work from. The price will depend perhaps wholly upon what sort of an agreement can be arrived at. This may be true likewise in the matter of hiving swarms in No. 22.

Every boy or girl, under 15 years of age, who writes a letter for this department, CONTAINING SOME VALUABLE FACT, NOT GENERALLY KNOWN, ON BEES OR OTHER MATTERS, will receive one of David Cook's excellent five-cent Sunday-school books. Many of these books contain the same matter that you find in Sunday-school books costing from $1.00 to $1.50. If you have had one or more books, give us the names that we may not send the same twice. We have now in stock six different books, as follows; viz.: Sheer Off, Silver Keys, The Giant-Killer; or, The Roby Family, Rescued from Egypt, Pilgrim's Progress, and Ten Nights in a Bar-Room. We have also Our Homes, Part I., and Our Homes, Part II. Besides the above books, you may have a photograph of our old house apiary, and a photograph of our own apiary, both taken a great many years ago. In the former is a picture of Novice, Blue Eyes, and Caddy, and a glimpse of Ernest. We have also some pretty little colored pictures of birds, fruits, flowers, etc., suitable for framing. You can have your choice of any one of the above pictures or books for every letter that gives us some valuable piece of information.

CONDUCTED BY ERNEST R. ROOT.

THE BOYS' BEE-HIVE FACTORY.

A FURTHER ACQUAINTANCE WITH OUR OLD FRIEND (?) MR. SHIFTLESSNESS; WHAT HE DOES, AND HOW HE GETS ALONG.

YOU will remember that we left Jimmie and Sam "slicking up" their work-shop, and that Mrs. Green, after having instructed them how to go to work, and what to do with the refuse, left them. The two boys worked together for some time in silence. Sam sorted and put away the boards, while his companion was master of the broom. As the work progressed, their zeal to wipe out all traces left by Old Shiftlessness grew more and more apparent.

"Well," said Sam, "it is not such a very bad job after all."

"No, it's just fun, ain't it? My! won't we surprise your ma when she sees what we've done?"

"I rather reckon she"—

"By cracky!" said Jimmy, interrupting, "what's this down in the litter of dirt? I swan, it's the hammer we've been hunting all over for, as sure as"—

"I didn't know Mr. Shiftlessness ever hid tools in that way. We might have hunted for months, and it never would have turned up. I recollect now of having used it in that very place, and I guess no one has had it since," said Sam, as he looked at the hammer.

"Yes, your pa said Old Shift. never put tools away, and that he's more like some fellows than he is other fellows. Leastwise he's not like me."

"Humph!" said Sam, as he pulled over a pile of boards near the saw-table, and espied the missing wrench. "What do you call this? You acknowledged, the other day, that you had the wrench last, and here is just exactly where you were working." Then holding it up before his playmate's eyes he said, with an air of triumph, "If *I* am shiftless, here is a sample of *yours*. Come, let's shake hands on that, for we be brethren."

Jimmie was just on the point of retorting, when, observing Sam's good-natured twinkle, and his allusion to brotherly kinship, he softened. They pushed forward their work, and by noon every missing tool turned up from its hiding-place, just where Old Shiftlessness had left them. When the boys had completed their work, Shiftlessness stepped out and Order stepped in. The noon whistle blew; and as the boys proceeded to draw on their coats, they remarked to each other that it looked just a little better, and, besides, they could find things now.

As Sam sat eating at the dinner-table, he recounted how they had driven Shiftlessness off the premises.

"You haven't quite yet," said his sister Mary, casting sly glances at her brother's hands.

"My hands are just as clean as yours. They are tanned, that's all. I will leave it to ma."

So saying, Sam placed one of his hands beside that of his sister. Sam had been working in the dust and dirt, and, not having washed his hands, it is needless to say there was quite a contrast.

"Yes," said his mother, "I did not notice your hands as you sat down to the table; but I must agree with your sister, that Mr. Shiftlessness has not yet made his departure."

Sam then appealed to his father, but obtained no better satisfaction.

At the request of his mother he got up and washed his hands, which, when he had done, he remarked, as he again took his seat, "They don't look much different from what they did."

"I think they are a decided improvement," said his mother.

"Yes," said Mr. Green, "your mother and sister were right. If you have finished your dinner I will now take a little time in showing you how to arrange your tools."

The two started for the barn-loft. On arriving there, Mr. Green said:

"Well, well! you have done your work much better than I thought you would. Why! your floor is very clean. I think I see evidence of your mother's supervision."

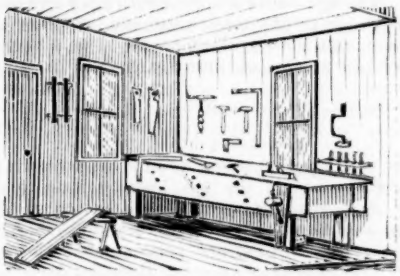
"Yes, ma did show us a little this morning; but we did all the work."

"You all deserve credit; but I see that your tools are still scattered over your bench in more or less confusion, and Old Shift., as you call him, has a fashion, when he finds tools thus, of getting them on the floor, and, by degrees, slipping them into hiding-places."

"They are all picked up and put on the bench. What more could you do?" said Jimmie, who had just now formed himself into one of the trio.

"Very true; but you can not tell at a glance whether any tool is missing. For instance, I want a tool. I go to this bench and fumble them over. Perhaps I find it, and perhaps I do not. Time is lost in either case, particularly the latter. Well, suppose

I do not find it. Just when I want it most, this is my first intimation that it is missing, and it may have been gone for some time—all because I did not have a place for the tool in question. You have both heard, 'A place for every thing, and every thing in its place.' If this is observed in the shop when a tool is not in its accustomed place, it is at once apparent. Let me show you how to tell where each tool belongs." So saying he picked up a saw, placed it broadside up against the side of the work-shop over the bench. Through the hand-hole he drove two nails. "There," said he, "we will let your saw hang there for its place."



A PART OF THE BOYS' WORK-SHOP.

"But, how are you going to tell that it belongs there?" said Sam.

Without replying, Mr. G. took a pencil from his pocket. With this he inscribed a pencil-mark clear round the saw, the pencil following closely all the indentations. Then taking the tool off its hangings, he said. "There, that is a pretty good picture of a saw, don't you think? It is only an outline, it is true."

"That's so," said Jimmie; "any one ought to know where that saw belongs."

Mr. G. then did likewise with a hammer, a hatchet, and a square. When these tools were removed from their hangings there was a perfect picture of each on the side of the shop, showing just exactly where they belonged, the size, shape, and kind of tools. Mr. Green then left them.

"That is just splendid," said Sam, as he took the monkey-wrench, drove a couple of nails for it to hang on, and then inscribed it with his pencil as it hung on the wall.

"Yes," said Jimmie, "the picture looks just like a monkey-wrench."

The boys did likewise with the rest of their tools; and when they had got them hung up over the bench, that portion of the shop looked like the cut given above. You will notice that the square, a small hammer, and a saw, are lying on the bench, but the pencil-marks on the wall show where each belongs. If you could have seen this portion of the shop just as Old Shiftlessness left it, you would not have recognized it.

At the other end of the shop, near the buzz-saw, there were sticks, fragments of hives, frame-stuff, sawdust, and general confusion of every thing. At the opposite end, or near the work-bench, there were tools, nails, shavings, sticks, etc., more or less mixed together.

JUVENILE LETTER-BOX.

"A chiel's amang ye takin' notes;
An' faith, he'll prent it."

FREEZING AND UNFREEZING BEES.

Since the November 15th issue, only three have responded to my call for experiments, on how long bees will remain in a chilled state, and not die. Perhaps it is a little early yet to get very many reports. In a good many localities, I am aware that real cold weather has not yet begun; and a continued cold is necessary for proper experiments. I propose that you young friends experiment just the same. As there probably will be colder weather during the next month you will have better opportunities to experiment. I want you to follow carefully the instructions I gave in our issue for Nov. 15, page 869; and if the prizes offered on that page are not satisfactory, you can select any ten-cent article in our premium-list you choose, if you send in a report of your experiments with freezing and "unfreezing bees." I want to see a whole lot of letters from all localities, where there is cold weather; and then, you know, when we compare the results of your experiments—well, we shall know more than we did before, won't we?

FROZEN BEES REVIVING AFTER 42 HOURS.

Monday, Nov. 28, at 7 o'clock P. M., I put two dozen bees on the snow and two dozen in a queen-cage where they were exposed to a freezing temperature, and I took, Tuesday, 7 A. M. (according to your rules), two bees from the snow and two bees from the queen-cage and put them in a warm place. Part of the bees revived and crawled around. At 7 o'clock, Tuesday P. M., I took two bees from the snow and two bees from the queen-cage, and part of the bees revived and crawled about. At 7 o'clock, Wednesday A. M., I put the required number of bees in a warm place, and part of them revived, but were rather weak. At 12 o'clock Wednesday, at noon (for I didn't think they would live until night), I took the required number of bees and put them in a warm place and they revived so they could move their beak and legs a little. At 7 o'clock, Wednesday P. M., I put about half a dozen bees in a warm place, and there wasn't any life to be found. Reckoning the time up it would be 42 hours, and the bees were filled with honey, for I examined them. If you think I am entitled to a jack-knife, I should like it.

Massena, N. Y. HERBERT HUTCHINS.

Most surely, friend Herbert, you are entitled to a jack-knife; and ere this it is speeding on its way to you as fast as steam can carry it.—So you could not make the bees revive after 42 hours—not quite two whole days. Well, that is pretty good for the first report. You followed instructions exactly, but you did not tell us whether the bees from the queen-cage revived any quicker than those taken directly from the snow. The object in getting the little folks to take bees both from the snow and from a queen-cage was to see what moisture had to do in determining results—whether bees that are perfectly dry will revive after a longer period in a frozen condition than those which

have been subjected to more or less dampness and wet in the snow. If I did not make this clear in our issue for Nov. 15, page 869, will the juveniles please take notice? The next letter we have was written in the interest of Master J. Curtis Haines, of Mohawk, N. Y. It is as follows:

FROZEN BEES NOT REVIVING.

In answer to your problem for little folks, I got a pan of clean dry snow, just after it had fallen, set it in the barn to keep it soft and light, and on Nov. 30, about 3 P. M., I opened a strong colony, smoked slightly. In a little while I took a small handful and dropped them in the pan of snow. As soon as they were chilled I put some in a dry paper box, and set them in a small open building. Next morning we brought two of each lot into the house, put them on the mantle near the kitchen stove, where it was nice and warm (not hot), but they showed no signs of life. We left them in all day, and got more of each lot, but they showed no signs of life at all. To-day I brought more in, but could not see any signs of life. They are quite dead. We opened some, and they seemed to be filled with honey. When we put the bees in the snow in the first place, it thawed some on the south side of the house, and the bees were bright and active, and seemed quite strong; but it was very cold that night. Next morning the thermometer was down to five below zero, and the next day was very cold. The thermometer was at zero. So you see if there is any thing in its being cold, they had the benefit of it.

This is in the interest of our little boy, who is after that knife you offer. If you think it worth it, you may send it to Master J. Curtiss Haines.

Mohawk, Herkimer Co., N. Y. J. C. HAINES.

Yes, Master Curtis, we send you the knife.

The following is a letter from a boy who, although 61 years old, is still full of youthful enthusiasm. It reads as follows:

FROZEN BEES REVIVED ON THE FIFTH DAY, AS REPORTED BY A BOY 61 YEARS OLD.

You wanted the juveniles to experiment on bees, and report. I am a juvenile of 61 years, but here it goes. I shook bees on the snow. Three days after, I took forty, put them in a fruit-can cover, and placed them on the reservoir of the stove. All came to life. On the fourth day, 35; all came to life but two. On the fifth day I tried 25, and they all came to but four. The night of the fifth day it rained all night; the sixth day I tried 20, all were dead. The snow all went off last night. During the fore part of the trial the ice was two inches thick. J. B. WHITON.

Ithaca, Gratiot Co., Michigan.

We are exceedingly obliged, friend W., for the valuable facts you furnish. We shall be glad to have you experiment further in the same line. While you drop some bees in the snow as before, put others in a dry place, where they will be subjected to a freezing temperature, and let us hear from you again. If I am correct, the results of your experiments have exceeded those of Mr. Doolittle by two days. Now, boys and girls of younger years, see if you can not beat grandpa Whiton. If you can, we will award you any two of the presents as given in our issue for Nov. 15. As for grandpa W., we will arrange it with him.

BEES, CARP, ETC.

We have been hauling water for the last four or five weeks. We have dug a pond which will hold a lot of water. I have been going to school about two weeks, and have had a happy time. Pa and I have fixed our bees for winter. We have about 125 colonies. We are building an addition to our shop, to saw logs for our own use. We are fixing to commence about Jan. 1st. We have our fall work about all done up. RAY MURRAY, age 12.

Ada, O., Nov. 26, 1887.

LOTS OF LOWER VENTILATION.

My name is Winfield Markham, but my papa and mamma call me Winnie. I am seven years old. My papa packs his bees with chaff and maple leaves. He thinks they want lots of lower ventilation, and not too much above. I feed the hens every day, and go one mile to school.

WINNIE MARKHAM.

Ellington, Chaut. Co., N. Y.

THE GROWTH OF CARP.

There are a good many flowers here from early spring till late in the fall, and I intend to keep bees next year. My grandfather has 36 stands of bees, and thinks that it is a very profitable business. I like GLEANINGS very much. The State Fish Commissioner placed 13 German carp in the fountain in a park in this city, and in the fall of the same year they took 3 pecks of ¼-inch carp out. CHAS. COX.

Quincy, Ill., Nov. 20, 1887.

A COMFORTABLE HOME FOR THE CHICKENS.

I have 17 chickens, and so I built a house for them 6 ft. by 12, and then put another ply of boards all around and packed six inches of clay around and on top of the house. Then I divided it into two rooms, and made a door into each, so tight that weasels and other small animals can not get in. I made a yard on the east side, 6 ft. by 12, of long strips 2 inches apart, and then I made a door at the south end. I am going to school.

JOHN H. MOWBRAY.

Sarnia, Ont., Can., Nov. 24, 1887.

This is right, friend John. If we keep chickens we ought to give them comfortable homes, don't you think so? I wonder if all the little folks who keep bees have given them as good homes as you have your biddies.

BUMBLE-BEES, AND DID THEY HIBERNATE?

When we boys fight bumble-bees, and can not whip the nest out, we get Mr. Bubmire to help us. He will take off his hat, pinch them with his fingers, and does not get stung. Bumble-bees are very curious. They live in small holes in the ground, or in log dirt, lined with moss or grass, through the winter. We have dug them out. In the spring, when it is warm enough, they start for work.

ELBERT EVINGER.

Tecumseh, Darke Co., O., Nov. 27, 1887.

Thank you, friend Elbert. You say you "dug them (bumble-bees) out." Do you mean that you did this in the winter? If so, did you find them alive? If you did, perhaps you have discovered something that the old folks did not know before. Will you tell us more about it? Hibernate, as found in the heading, is a big word. It means—well, living through the winter in a sort of sleep, without eating any thing.

OUR HOMES.

Therefore I say unto you, Take no thought for your life, what ye shall eat, or what ye shall drink; nor yet for your body, what ye shall put on. Is not the life more than meat, and the body than raiment?—MATT. 6:25.

WHEN I left home on Monday evening to go to the Michigan State Convention, I felt very much as if I ought to stay at home; and, to tell the truth, I did not want to go very much. It seemed like tearing myself away from duty, and the business that needed me here; and for a good while I could hardly feel reconciled to the thought of breaking the threads of home matters, and fixing them on something else; but I tried to think, in the language of our text, that God would provide work for me, and that it was my duty to go away from home and mingle more with my fellow-men and the great world at large. An hour later, and I was waiting at the depot in Elyria for the incoming train. But it seemed wicked for me to sit there idle when there was so much to be done; and yet I knew from previous experience in like circumstances that there was probably plenty that God would have me to do, and perhaps very near by. I have no right to speak for others; but I am sure that God calls on *me*, in like circumstances, to get acquainted, and to be doing something. A bright-looking young man near the stove remarked to a companion the time, as he looked at his watch, and I added that we had just about an hour more to wait. His next remark indicated that he knew me, and I soon found that he was the son of an old neighbor who lived near us on the farm, and that he was now located in a neighboring town where he had been practicing medicine for the last five years. I recognized the town as one wherein I had labored to build up the church and Sunday-school, and I was glad to have him tell me about it.

"I suppose, friend ——, you have preaching now every Sunday, of course? When I was there, the minister came from an adjoining town every other Sabbath; but now I presume you have a regular pastor."

"I am sorry to say, Mr. Root, that it is just as it was years ago. The church is not strong enough to keep a minister, and have preaching every Sunday. Why, there are only fifteen or twenty members in the church, all together."

"They were mostly women at the time I was there; is that the case still?"

He replied, to the effect that there were only four or five male members in the church. Said I, "And of course, friend ——, *you* are *one* of these four or five faithful ones?"

He cast his eyes down, and admitted that he was not. In his previous conversation he told me that he loved the Bible and Christianity, and remarked to the effect that he was hungering and thirsting after righteousness. I think he said his wife was a member of the church, and he admitted that there was no reason why he should not be among those four or five who were helping to bear the cross of Christ. I told him, as well as I knew how, what influence a physician of the town might exert over the people, and I reminded him that he could not very well exhort others to accept Christ, unless he stood up boldly before men and practiced what he would have others do. In reply to my questions, he declared there was nothing in his life or habits that he would have to give up, to become a professor, and that it was only because he hadn't got around to it, or got ready, that he had been all these years aloof. The minutes did not drag any longer. As we talked, an old gentleman who sat near came up to us, and I saw by his looks that he was interested. As I parted from my young friend on the train, there was a bright happy look in his eye as he gave me his hand and thanked me. I told him I should pray for him, and that the best news I should ever hear of himself was that he was making Jesus first, and all else secondary.

At the convention I met a man and his wife with whom I plead some years ago on exactly the same subject. Their family was growing up around them, and they were not members of any church. The lady confessed to me that she had been conducting a Sabbath-school which she had been instrumental in starting in their neighborhood, because there was no church: but neither herself nor husband had united with the church nearest them.

Now, this kind of exhortation is all very well, providing the one who exhorts makes his life in keeping with what he professes. May be I was getting a little vain of my ability to lead others, and may be I was thinking I was getting to be a pretty good sort of Christian. In any case, I had a reminder very soon that I needed to pray for myself as well as for others.

I was ready to start home; but for certain reasons I wished to purchase a ticket at first only to a neighboring city, and I asked the agent how much it was. He said $3.35. I gave him four paper dollars. The train was ready to start, and he hurriedly handed me a silver dollar, half a dollar, a dime, and a nickel. In my haste I came pretty near not counting it; but when I got the silver dollar in my fingers, and held it up, it occurred to me that I ought not to have a whole dollar back in change. In other words, he had made a blunder. Now, I am ashamed to say it; but I guess I had better acknowledge that self suggested putting all the change in my pocket, without telling him. I believe I have boasted several times that the "almighty dollar" never tempted me from the path of duty; but there I was, actually coveting that bright round silver dollar that I knew was not my own. I did not hold it in my fingers, I presume, a whole second; but in that second, self (or Satan) whispered, "You must have misunderstood him. He probably said $2.35." Then came the thought, "Why did he not give me back one of the paper dollars I gave him?" But self put in again, "There is not time to bother with it now, anyhow; besides, it is *his* business—not yours. You gave him the money, and he gave you back what you ought to have." Self seemed to get a little bolder here, and added, "Your expenses on

this long trip will be larger, doubtless, rather than less than you had calculated; better hurry up, or you will lose the train." I can not tell even now, dear friends, why such thoughts should have come into my mind. It seems, as I think of it, that it was a remnant of that old life before I belonged to Christ Jesus. Then I used to have such temptations, and I used to yield to them, too, thinking, poor silly fellow! that I was adding to my stock of this world's goods. Why, it made me fairly tremble as I reflected of a professor of religion, and one who even presumes to point out the way for others, listening to such suggestions as the above. I do not know how long it took for me to recoil with my whole nature, and bid these evil thoughts be down and away, as I would speak to some ill-mannered cur that, with muddy feet, might try to spring up and soil my clothes. I said, mentally, "Get thee behind me, Satan; do you suppose I am so silly as to think I could be happy with a dollar that is not really my own—a dollar for which I have rendered no sort of equivalent? For shame!"

I believe it was Moody who once said that no man could be a Christian, with a single dollar in his pocket that belonged to somebody else; and I believe we should have better Christians if there were more who felt convinced of this. If this be so, you had better miss a hundred trains; nay, you had better lose even your life, than to go off coolly and deliberately with only a single dollar in your pocket that is not justly your own. "What shall it profit a man, if he gain the whole world and lose his own soul?"

"My friend, I gave you only four dollars," said I.

He looked at me, somewhat embarrassed; and as I showed him the change which he had given me back, he took the dollar and colored a little to think I had caught him, a ticket-agent, in such a blunder. I thought if he could forgive me, I could forgive him; and I took great pleasure in remarking to him that I did not want a dollar belonging to anybody else; and with a good-natured smile I suggested that "mistakes will happen," etc. He caught my eye, and his face brightened. The happy look that shone forth from my face seemed to have touched his spirit just right; and who knows but that the glimpse of sunlight went along with him as well as along with me? As I thought it over, it occurred to me that possibly God was trying me as he tried Abraham of old. Is it not possible that he is waiting and watching for men whom he can trust? Who knows but that he has been saying, "I have a great deal of work for Mr. Root to do for me, and I want to be sure that he can resist temptation"? You know he said to Abraham, "For now I *know* that thou fearest God."

This trial, however, was but a preface to another. May be you will come to the conclusion that your old friend A. I. Root is but a poor weak sinner after all; and if you do, dear friends, you will think just as I do about it. I will now explain to you, that the object of my journey to the great city of Grand Rapids was to see the immense lettuce-houses, which I had learned at the horticultural convention were there. I had also learned they had a new variety of lettuce, superior to any thing else in the world. It was not only specially adapted to greenhouses, but it grew very large—nearly a foot high; and by careful selection it had been made to grow so white and crisp that it almost rivaled the "White Plume" celery. I knew I had but a limited time to hunt up the greenhouses, if I reached home Saturday night; and I felt as if I must do that in any case. Let me digress a little. The night before, I had been obliged to travel till eleven o'clock. The ride was a long and lonely one; and as I changed trains for the last hour, I stepped into a car where a few men were assembled together near its center. One young man stood up addressing the crowd as I came in. At my entrance he stopped and said, by way of apology to the new comers, "Friends, I have just been telling a little story; and with your permission I will continue it."

The attitude of the man, and his appearance, suggested at once that he was a commercial traveler, or drummer; and former experience made me feel that, perhaps, now was the time to show my colors, and that perhaps I had better show them quickly. I replied, "My friend, we have no objections to your continuing your story, providing it be such a story as fathers of families ought to hear; or, if you choose, such as Christian men ought to listen to." He gave me a smile that was not very assuring—at least I thought so—and continued. The story was one calculated to attract the attention of his audience, but it seemed to have no particular point either way. He told another one that pretty unmistakably pointed toward the cross of Christ, although I inferred that his audience did not see it. Then he gave them a short talk—such a talk as you might imagine a converted drummer might use, if he were using all his past experience and tactics to plead for the Master. It was evident that the audience was a little undecided. He attempted to sing a hymn; but for some reason, perhaps for lack of sympathy, it was not very well done, and he was losing ground. I thought he needed an encouraging word, or just the least bit of sympathy from some one of these men of the world who were holding him, as it were, at arms' length. I gave him that sympathy and assistance. He sang another hymn, and with such touching pathos that it won almost every heart. They gathered nearer him and asked him to go on. He was a comparatively new-born soul, and his words were interspersed with such phrases as traveling men use; but his teachings were sound. He asked me if I was a minister. I assured him I was not, but that I was, like himself, one who is preaching Christ wherever the Lord led him, in his own humble way. We exchanged experiences and strengthened each other, and I did not see him again until he unexpectedly came into the car when we were nearing the great greenhouses. I asked him some questions about the city, but he could not answer; but a brother commercial traveler, overhearing our talk, gave

me just the information I desired, directing me to get off at the first station, and telegraph to the friend who had promised to show me the greenhouses, telling where I would be, and at what hour. I want to say here, that this trip surprised me as much as some others, to see how ready wealthy and busy men were to throw aside their business to show me around, and assist me in working up any of these fancies of mine. This friend in Grand Rapids, although he has over 70 acres devoted to fruits and market-gardens, with six or seven greenhouses, besides a store for cut flowers, left his business, procured a horse and carriage, and met me at the depot. As it was after dark, he drove me several miles to the lettuce-greenhouses, got the proprietor to show us through with a lantern, brought me back to the city, showed me their public buildings and matters of public interest, and refused to accept even what he was out of pocket for his efforts in assisting an entire stranger. Had I not taken the part of the converted drummer, I feel sure I should not have had faith enough in my fellow-men to mention my wants on the cars; and over and over again I have been glad I took pains to get acquainted with those with whom I was traveling; in fact, I can not remember that I have ever had any reason to regret having formed acquaintances while traveling. I suppose, of course, we ought to use judgment and wisdom in deciding whom to approach in this way.

Well, the sight that met my gaze in that greenhouse was worth to me the whole trip to the State of Michigan. The plants were the brightest and thriftiest of any thing in the vegetable or floral kingdom I had ever beheld. They were all exactly alike. The great bed was covered as if it had been planted with fringed plumes of ostrich-feathers. They were not exactly white, but of a beautiful *creamy* whiteness. The stalks were white and crisp. Other beds and other greenhouses showed the beautiful new variety of lettuce in every stage of growth, from the seedling just bursting through the soil, to the plants just ready for market. The owner of the greenhouses was an entire stranger to me; furthermore, I knew he was averse to letting strangers get hold of the new lettuce. He had brought it to its present state of perfection by many years of careful selection and study. The plant is not only specially adapted to greenhouse culture, but it is a rapid grower, free from rot, and handsomer than any thing the world has seen heretofore. He was very kind and obliging, and he reluctantly consented to sell me a few plants. When I wanted to know if he would let me have some of the seed, there was evidently a conflict between his generous and obliging nature, and his preference to keep the business in his own hands. I saw it, and frankly told him he need not let me have any of the seed or plants unless he chose. I mentioned that I would willingly pay him a large price for even a few seeds; but as that would very soon give me opportunities for raising seed for myself, he preferred not to do it. He said he had already refused a considerable sum for even a few seeds. Now, I was so much in love with that lettuce that I felt almost determined to have some plants or seeds to raise in my own greenhouse; but could I as a Christian, or even as a gentleman, insist on it when he preferred not to sell any? "Render unto Cæsar the things that are Cæsar's, and unto God the things that are God's." The tussle with the almighty dollar came up before me, and my little prayer of "Lord, help," came up. Yes, and an addition to it came up in this wise: "Lord, help thy servant to do in this matter as in all others, as becometh one who is constantly teaching others to do *all* for the honor and glory of God."

This friend supplies seed or plants to the greenhouses around Grand Rapids, who raise his kind of lettuce, and so they have succeeded in keeping this industry among themselves. Some might call it a little ring in the lettuce business; but, my friends, is there any thing wrong in such a ring, if those who own the seed and own the business choose to form such a one? May God help me to be careful about accusing people of forming rings; and I really believe of late I am beginning to be a little suspicious of those people who are ready to accuse *others* of having rings. My friend consented to sell me as much of the *lettuce* as I wanted, but he preferred I should not grow it. Even with honest intentions, somebody might steal one or more of my plants, and pretty soon the seed would become public property. If it were *mine*, as you well know, it would be public property at once; for I have other avenues through which money comes. Self whispered, during the talk, that I could take some of the leaves or heavy stalks of the lettuce and make them take root in sand, as greenhouse-men do in propagating, and thus get seed. But suppose I did; could I ever find happiness in taking it in this way, from the good friend who took his lantern and showed me his lifework in his beautiful greenhouses? Even suppose somebody did get genuine seed by such underhanded means, would the world believe such a person, and patronize him? In thinking it over I feel to rejoice that the world demands, especially of late, that a man be *strictly* honest. When I can, by permission, make this seed public property, and scatter it among you in five-cent packages, then I will do so and feel happy over it, and not before. When all men arrive at such a point that they will refrain from taking any undue advantage, even though they have the opportunity, without violating any law, or even without being discovered, then will the millennium be near at hand. I came away happy. I had not got the seeds or plants I longed for, but I had something better — the approving voice in my heart of the great Creator who gave us the lettuce and the bees, and all these things to train to our wants and wishes and notions.

A few minutes more, and I was almost startled when the agent of one of the great union ticket-offices handed me *two* silver dollars more than I ought to have. I felt glad in my heart, however, to find there was not even the faintest trace of a desire to keep

them. If Satan made just a little impression the other time, he didn't a bit here; and with it came the feeling, "This money *all* belongs to the Master, and not to myself." So long as he supplies me with all I want and all I need, why should I covet any thing? Oh, the unsearchable riches of those who have their whole trust in the resources of Him who is Lord of all!

All at once one of the friends whom I had left at the convention came into the car where I sat. He was on the way home, and was as much surprised on seeing me as I was on seeing him. I did not know how soon he would be called on to leave me, and so I came, pretty soon, squarely up to the work I felt the Master had given me to do. Said I, almost abruptly,—

"Friend ——, you are a Christian, I believe."

He looked up at me with a smiling face, and said:

"Mr. Root, just the very moment my eyes fell on you as I came into this car, I felt that I should be called upon to meet this question. And now I want to tell you that I am glad that you have said just these words to me, even though it be true that I am not and never have been a member of any church. The reasons why I have never united—that is, if they are fit to be called reasons—are, that the church I had thought I must unite with, if any, is not near at hand. I have been helping in another church, and my wife and I have been studying the Bible, and have even gone so far as to have family prayers, but we are not members of any body of Christian people. I have known my duty, but some how I have longed to have somebody assure me, as you do, in your earnest way, that it was just what I ought to do."

The church he mentioned is a new one, in a new section of country, and it is doubtless weak and very much in need of the energy, intelligence, and spiritual strength which these two young bee-friends can give it. Its influence for good on the community round about will, without question, be ever so much greater for having these two come forward and take a bold stand, and let their faith be shown by their works. As we parted he took me by the hand and promised that, if his wife approved (and he felt sure she would), they would at once, before another Sunday, go to the pastor and tell him of their determination and wish to become members of the church. A strange feeling comes over me when I think of his remark, that he expected me to labor with him on this very question. If such responsibilities are coming upon me, how great is the need that I be pure in heart and honest in deed! "Lord, help!" comes up again and again; and when I think of the little conflict—yes, perhaps even *feeble* conflict—over that bright round dollar, how earnestly can I pray that I may be cleansed, both soul and body, from all temptations of a like nature, taking no thought for what we shall eat or what we shall drink, nor yet for the body what we shall put on; for is it not true, that a life with Jesus is incomparably more than meat or raiment, or *any thing else* that the world can offer?

Our Own Apiary.

CONDUCTED BY ERNEST R. ROOT.

PINE STRAW AS A SMOKER FUEL.

A FRIEND from the South, W. W. Wilson, Punta Rossa, Florida, sends a package of "pine straw" as he called it, to be tried in the Clark, as a smoker fuel. The material was evidently the spines, or leaves from a species of pine-tree — the spines of which were about a foot in length. From the package sent, I took a bundle large enough to slip down into a Bingham, having first lighted the bottom ends. A few puffs of the "Doctor" gave me a beautiful smoke, dense and curling. It lasted well, and did not diminish in volume. In consequence of the length of the fuel, I did not try any in the Clark, though it now occurs to me I might have coiled it up, in which case I have no doubt it would have burned as well as in the Bingham. Those who are so situated as to be able to get this pine straw, such as our friend sent, would do well to try it; and if satisfactory, lay in a stock of it for next season's use, to dry.

THE SMOKER QUESTION, AGAIN.

As our friend R. L. Taylor, on page 845, has spoken so vehemently in favor of the Bingham, after having used the cold-blast, perhaps the testimony of another friend who has used both smokers may be interesting right here. He says:

I have read in GLEANINGS the discussion in regard to smokers. I used Bingham's 6 or 7 years. For the last year I used Clark's. It is a comfort to use it. Bingham's is about the nearest to a disappointment it can be. It is generally out when I want it. Sometimes it is too hot, and then again it throws sparks among the bees. I. B. WHITON.

Ithaca, Mich., Nov. 21, 1887.

I do not give place to the letter to in any way detract from the merits of the Bingham smoker, but to show that some are just as vehement in praise of the Clark as others are of the Bingham. While I recognize and have experienced some of the defects mentioned by the friend above, I have not found them quite so bad. Isn't it a good deal in notion, after all, friends? We can't all see things alike.

Here is a letter from another friend:

A SUGGESTION ON BINGHAM'S SMOKER-TOP.

I see that Ernest burns his fingers, and empties the contents of the Bingham smoker into the hives. Now, did it ever occur to him that, if he would simply connect the cone and fire-box on the side with a small hinge, riveted securely, it would be the easiest thing in the world to open and close, without burning fingers or spilling fire into hives? I have used mine in this way two years. I am well pleased; but I would not use it if I were obliged to pick up and place the cone off and on in the old way. O. G. JOSENHANS.

Owosso, Mich., Nov. 26, 1887.

I have several times thought myself that a hinge to the top would be a convenience, and perhaps quite an advantage. But perhaps friend Bingham does not look at it in that way.

TOBACCO COLUMN.

UNDER the influence of GLEANINGS I have quit the use of tobacco, having smoked my last cigar about two months ago; and if I am entitled to a smoker, and you send it, I will willingly pay for it, if I ever resume the habit. G. SMITH.

Alpha, O., Oct. 24, 1887.

Mr. Chas. M. Lynch has promised to quit using tobacco. Please send him a smoker. I will pay you for it if he uses it again. E. E. GUY.

Trenton, N. J., Nov. 28, 1887.

I have quit the use of tobacco after seventeen years' chewing and smoking. Send me a smoker. I promise never to use it again, or I will pay for smoker. W. F. WINSTEAD.

Delhi, La., Oct. 22, 1887.

I told you last fall that, if you would give me a smoker, I would quit the use of tobacco. I quit last fall. If you see fit to send me one, I will pay you for it if I use the weed again. S. W. WHITE.

Liberty, Mo.

BROKEN HIS PLEDGE, BUT PAYS FOR THE SMOKER.

I am sorry to tell you I have broken my pledge, but I must send smoker money, which, according to promise, is the price of two, $1.20. They came by mail. J. A. KIME.

Fairfield, Pa., Nov. 25, 1887.

About the first of the year, Mr. Van Fradenburg sent for a smoker for a young boy, who had been brought up in tobacco, and had used it for some time. At the fair this fall, he was led away. We are very anxious to have him try again. I have persuaded him to let me ask you to give him another trial. Shall we send you the money, or shall we try him again?

MRS. E. VAN FRADENBURG.

Vintonton, N. Y., Oct. 17, 1887.

Try him again, by all means, my friend.

INTRODUCING QUEENS.

A SUGGESTION ABOUT VIRGIN QUEENS.

PEOPLE often ask me how they shall introduce their queens. I tell them how I would treat a valuable queen. It is thus: I go to the hive that is to receive her, take out all the frames, finding and caging the old queen. I then put the frames and bees into another hive, which I set on the old stand. I clean out the old hive, being sure that every bee is brushed out. I spread a sheet in front of this empty hive, and shake the bees off the combs, putting them at once in this hive. I then sprinkle the bees with water sweetened with honey, and scented with some strong essence. I then hive them as a new swarm, daubing the queen well with honey, and letting her run in the hive with the bees. I have introduced many in this way, and have never lost a single queen. Some one (I think Mr. Doolittle) says, "Cause the bees to first fill themselves with honey before shaking off the combs." This would be the better way. I have used this plan of introducing for a number of years, and, as I said before, never yet made a failure. Now, I should like to ask you, Mr. Editor, why this will not do for young virgin queens as well as for the fertile queens. M. A. KELLEY.

Milton, W. Va., Nov. 19, 1887.

The plan is an old one, friend K., and is, perhaps, about as reliable as any known; but everybody, sooner or later, votes it too much trouble. We sometimes make use of the plan when every other fails. Very likely it would answer for introducing virgin queens, the amount of labor and time occupied being the only objection.

GLEANINGS IN BEE CULTURE.

Published Semi-Monthly.

A. I. ROOT,
EDITOR AND PUBLISHER,
MEDINA, OHIO.

TERMS: $1.00 PER YEAR, POSTPAID.

For Clubbing Rates, See First Page of Reading Matter.

MEDINA, DEC. 15, 1887.

If any man will do his will, he shall know of the doctrine, whether it be of God, or whether I speak of myself.—JOHN 7:17.

WE have lots of copy in the copy-drawer, so do not be disappointed if you do not see your communication appear in the "next issue."

WELL, friends, this number finishes the year of 1887. We wish you a merry Christmas and a happy New Year, even should you decide not to remain with us during that year.

BUCKWHEAT CAKES AND HONEY.

HAS any one tried buckwheat cakes made out of the new Japanese buckwheat? If so, report and tell us whether they taste any better than when made from the common buckwheat. Question.—Candidly, which do *you* think is better—cakes and honey, or cakes and rich maple molasses? *We* rather prefer the latter.

THE OHIO STATE BEE-KEEPERS' ASSOCIATION.

BY reference to another column, under the head of "Convention Notices," the reader will observe that the Ohio State Bee-keepers' Association will meet at Columbus, the second Tuesday and Wednesday of the month, Jan. 10th and 11th. The convention will be held in the United States Hotel, corner of High and Town Sts. Rates are $1.50 each, double, or $2.00 per day single. The matter of securing reduced rates of travel is now in the hands of a committee, further announcements of which will be made in our next issue, at which time, also, a full programme will be given. Every effort is being put forth to make this a success, and a good rousing meeting is expected. Every loyal bee-man who can should be present. The local conventions of the State which have not already appointed a representative, should see to the matter at once.

LANTERN SLIDES ON BEES.

WE are indebted to Alfred Watkins, Imperial Mills, Hereford, Eng., for samples of some of his lantern slides on bees. Among them are microphotographs. They are all exceedingly fine, and are well adapted to accompany lectures on the subject

of bees. That you may know what friend Watkins is able to do, we will say that he has actually photographed, by the instantaneous process, a bee on the wing—some about to alight, and some just flying from a head of clover. Of all the engravings of bees on the wing, we never saw one that was true to life. We shall place the slide in the hands of our engravers, and see if we can not get a correct picture. There are also other specimens which we hope to illustrate. The price is one shilling each, and can be obtained of the address above.

MY TWO UNFINISHED STORIES.

THE friends will remember that I promised, in our last issue, to give the conclusion of my trip to Chicago; but matters of so much interest came up while in Michigan that I felt I must tell you about them while they were fresh in my mind; and in the present issue I have not more than half finished that story, so I see no help for it but to finish both in our issues for January. As we now send the journal right along, however, until we are told to stop it, most of you, at least, will get the remainder of both articles.

CEREALINE GEMS GOOD WITH HONEY.

WE have made a discovery at our house; namely, that the most beautiful gems can be made by using cerealine with the flour, making the gems in the usual way. They are as light as a sponge, and so soft to the touch and palate that one thinks he is eating delicate sponge cake; and when they are eaten with a nice quality of honey it makes one of the daintiest dishes on a frosty cold morning. I think you want a pitcher of milk near by, to make the repast complete. You can get the cerealine, with directions, at almost any grocery. It costs here in Medina, 18 cents for a two-pound package.

THE NEW LETTUCE I FOUND AT GRAND RAPIDS.

WHILE I write, a celery-glass full of the above lettuce stands on the table before me. A single stalk is over 15 inches tall, and it fills the holder so as to spread out and droop over on all sides. The very sight of it is tempting, and the taste makes me think of summer showers in June. We will try to give a picture of it in our next issue. Mr. Eugene Davis, lock box 34, Grand Rapids, Mich., is the originator and proprietor of this new and handsome vegetable production. You can buy plenty of the lettuce of him by the basket or by the barrel. Twenty cents a pound is what he charged me. It will retail readily, before the holidays at least, for 40 cts. a pound. He will sell you the lettuce, but you can not get the seed, unless you are more lucky than I have been; and even if you had it, you would probably need his greenhouses and skill to grow it in winter time.

FRIEND HUTCHINSON'S NEW BEE-JOURNAL.

As will be noticed by an advertisement on another page, this journal is to make its appearance in January. I have often thought it would be an excellent thing for some one who is competent, to make a review of the great mass of information that is constantly appearing in our bee-journals; and one or more of the various journals have at different times undertaken it, but have finally given it up. It not only requires somebody with great knowledge and experience, but some one who can patiently go through all the journals and sift the wheat from the chaff. Now, in view of the fact that what we now consider to be wheat may soon transpire to be chaff, and *vice versa*, the task is no easy one. Of course, a real live bee-man, and one who is an actual honey-producer, is needed for this work; and just now I do not know of anybody better calculated to do the work than is friend Hutchinson; and I believe, also, he is a man who is not apt to get weary in well doing. We shall see.

NEGLECTING TO RENEW.

IN both of my recent trips I met many old friends who said they had formerly taken GLEANINGS, and never intended to have it stop; but they kept putting off and putting off writing a letter to send for it, and finally it was neglected altogether, contrary to their intentions and wishes. The sight of me, however, revived a disposition to renew acquaintance, and nothing more was necessary than to just push a dollar toward me. I always get hold of *such* dollars, you may be sure. Some time ago we proposed remedying this matter by having an agent at each postoffice, to look up those who wanted the journal to continue, but our efforts have resulted in only about 40 local agents. Last year, Ernest suggested another remedy, which was, to keep the journal going until we were desired to stop it. I suppose this not only covers the trouble in question, but it sometimes results in sending the journal to those who did not mean to have it. They kept neglecting to write a letter telling us to stop it; and finally, as one issue after another came, they decided to let it come. This puts the shoe on the other foot, you see; but as the recipient almost always decides that he has had his money's worth, if not in bees in something else, we conclude it is the lesser of two evils; therefore if you desire it to keep coming, just attend to your other matters and don't bother about GLEANINGS. If you *prefer* to have it stopped, however, just scratch on a postal, "Stop it," and I assure you it will be done, without adding a single word more.

"A MODERN BEE-FARM."

THE above is the title of a new English work by S. Simmins, Rottingdean, Brighton, England. The work contains 200 large pages, beautifully printed on a fine quality of paper. In plan it is excellent, each subject and its sub-head being distinctly separated by strong black head-lines, so that a novice can easily find such information as he may need. Mr. Simmins is not only the author of "A Modern Bee-Farm," but he has one practically in successful operation, as one of the excellent photographs in the work testifies. Among other subjects of British apiculture we find The Non-swarming System, The Production of Honey, House-apiaries, The Production of Wax, and the Non-use of Foundation, etc. With few exceptions, the writer says in his preface, the instructions are drawn from his own experience of 20 years. As one opens the book and turns the fly-leaf, a pleasant surprise greets him. An actual photograph pasted on the leaf (not an engraving) represents Mr. Simmins, his good wife, and a family of five children. The group, from the baby to its papa who is holding it, is a very interesting one, particularly to us. We feel sure Mr. S. is a home man, and it is this domestic feature that makes us feel a nearer kinship to himself and his. We can not describe the picture further; but if you wish to see it you can obtain the work of the author as above for 7s. 6d., postpaid (or $1.80). A cheaper edition can be had, 3 s. 6 d. (85 cts.). The

latter, however, is bound in flexible cloth binding, and is not accompanied with the photographs.

GLASSED AND UNGLASSED SECTIONS.

SEE what one of the commission men say about these in the Honey Column. You will be interested in reading the whole of this department.

SPECIAL NOTICES.

We will pay, until further notice, 10 cts. each for February 1st and March 1st issues of GLEANINGS, this year. Be sure to send the right ones.

OUR SEED CATALOGUE.

Our abbreviated list of seeds will be put in the January issue, and our vegetable-seed catalogue complete, somewhat later. We say this in answer to several inquiries.

DISCOUNTS FOR DECEMBER.

During the month of December we will allow 5 % discount from all articles in our catalogue. This is an inducement for you to order your next year's supply now, and not wait till spring, when we are crowded with orders. Remember, the discount grows less the longer you wait. January discount will be 4%; Feb., 3%. After Feb., no discount.

PERFORATED ZINC.

We are making new dies and punches for our zinc-perforating machine, with which we hope to make more perfect perforations than heretofore. In our Jan. 1st catalogue we have also reduced the price to $1.20 per sheet, 28 x 96; $1.20 for 10 unbound honey-boards, 14 x 19½, for Simplicity hive. Discounts remain the same as before.

AN EXTRA-FINE QUALITY OF EXTRACTED HONEY AT 10 CTS. PER LB.

We have just purchased over a ton of a very fine quality of clover and basswood honey, put up in our 60-lb. square cans, 2 in a box. We bought this at a price whereby we are able to offer it in case lots at 10 cts. per lb. "Gilt-edge" basswood or clover honey, at 1 ct. per lb. more. Samples mailed free on application.

JAPANESE BUCKWHEAT FOR SEED.

I suppose the demand and supply will govern the price for the coming year. We have started it as follows: One bushel, $4.00; ½ bush., $2.20; one peck, $1.20; ½ peck, 75 cts.; 1 lb., 16 cts.; ¼ lb., 5 cts. If sent by mail, add 18 cts. per lb., or 5 cts. for ¼ lb., for postage. We wish you who have raised it would help in establishing a price. Tell us how much you have, how much you will sell for, and then we can decide whether the price must be raised or lowered. I was a little afraid last winter that I was urging too many to give it a trial; but now it transpires that the ones who bought most of it are the lucky ones.

PRICES ON A B C OF BEE CULTURE.

We have decided on the following schedule of prices on the A B C of Bee Culture, which takes effect Jan. 1st, 1888, and will be strictly adhered to. These prices are printed in our Jan. 1st edition of the catalogue now in the press:

TABLE OF PRICES.	BY MAIL.		BY EXP. OR FREIGHT.	
	Cloth.	Pap'r.	Cloth.	Paper.
One A B C of Bee Culture	$1.25	$1.00	$1.10	$ .88
Two " "	2.25	1.75	1.95	1.51
Three " "	3.25	2.50	2.80	2.14
Four " "	4.10	3.10	3.50	2.62
Five to ten, each	1.00	.75	.85	.63
Ten or more, each	.90	.72	.75	.60

This last price, which is 40% from retail price *by mail*, will be given on orders for books in any quantity from booksellers and newsdealers who send, with their order, printed evidence that they are such; also to all dealers who advertise the A B C and send copy of such advertisement. Any person who has had one book at the retail price can have all books after that at the 5 rate (25 cts. less), *provided they mention, every time they order*, when they had one before. Those who take 100 or more books at once can have special prices on application.

ENGLISH HONEY-TIGHT CAN-TOPS.

The cover is so constructed, that, when put on tight, it is next to impossible to crowd it off from the under side. Stamped in one edge of the cover are the words, "Lever this up." The English do it with a crown. As we don't have crowns, we may use a 50-cent or a dollar coin; and if we are not fortunate enough to possess these, a 2-cent piece, or something similar in construction, will answer. That you may see just what it is, we will send a sample top, postpaid, for 5 cts. We can furnish four sizes of cans with these tops, as follows.

	Each.	10.	100.
6 lb.	.10	.90	$8.50
5 "	.10	.85	8.00
3 "	.9	.75	7.00
2½ "	.8	.70	6.50

In the flat, 20 per cent less than the above prices.

We have only one size of these tops, 4¼ inches in diameter, hence we can not furnish the smaller sizes. We are going to try to effect arrangements to have them made in this country, if they prove popular enough.

CONVENTION NOTICES.

The Nebraska bee-keepers will meet in Lincoln, Neb., on Jan. 11, 1888, for their annual meeting.
Humbolt, Neb., Nov. 11, 1887. HENRY PATTERSON, Sec.

The annual convention of the Vermont Bee-keepers' Association is to be held at the VanNess House, Burlington, Vt., January 18 and 19, 1888. Programmes will be sent later.
Shoreham, Vt. R. H. HOLMES, Sec'y.

The State Bee-keepers' Association of New York will meet at Utica, Jan. 17, 18, and 19, 1888. Full particulars later.
Pine Plains, N. Y. G. H. KNICKERBOCKER, Sec'y.

The Susquehanna County Bee-Keepers' Association will meet at New Milford, on Jan. 7, 1888. Subjects for discussion: The best way to prevent swarming; also, Is it advisable to Italianize? All bee-keepers are cordially invited.
H. M. SEELEY, Sec., Harford, Pa.

The Ohio State Bee-Keepers' Association will hold its next session Jan. 10th and 11th, Tuesday and Wednesday, at Columbus, in the United States Hotel, corner High and Town Sts. Rates are $1.50 each, double, or $2.00 per day single. Let us have a rousing and interesting meeting. We have a Langstroth, a Miller, a Tinker, a Root, a Boardman, a Muth, and scores of others who have a national reputation. There will be an interesting programme arranged, and the convention will be held but two days, so it will be necessary to get to Columbus the evening before, so that we may open up the first day with a good attendance, and get the full benefit of the two days.
Bluffton, O. FRANK A. EATON, Sec'y.

The Nebraska State Bee-keepers' Association will hold its next meeting at Lincoln, Neb., on the 11th day of January, 1888. The following topics will be discussed:
How does bee-keeping pay, compared with other pursuits?
How can beginners be so taught as not to ruin the market for those more experienced?
Superiority and excellency in the production of honey, and marketing of same; by Mrs. J. N. Heater, of Columbus, Neb.
What are the most essential points in locating an apiary?
Bee-pasturage, and the diseases of bees; by E. Kretchmer, Coburg, Iowa.
Spring management of bees; by E. M. Hayhurst, Kansas City.
Bee and honey plants; by Prof. Bessey, of the State University, Lincoln.
There will be a question-box. R. R. RYAN, Sec'y.
Bradshaw, Neb.

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WANTED.—To sell or exchange one Novice honey-extractor, No. 9; one $7.00 saw mandrel and saws; 1000 metal corners, tops only; all back No's of GLEANINGS from Jan. 1st, 1881, to Jan. 1st, 1887. Who wants them very cheap? What have you to exchange? A. B. OSBUN, Knoxville, Iowa.

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